

PROJECT NAME: HARDBERGER PARK PHASE 4 (PARKING LOT)

DATE: 7/30/15

**ADDENDUM NO.1** 

This addendum should be included in and be considered part of the plans and specifications for the name of the project. The contractor shall be required to sign an acknowledgement of the receipt of this addendum and submit with their bid.

TCI PROJECT NO.: 40-00430A

## FORMAL INVITATION FOR BID AND CONTRACT:

## 010 INVITATION FOR BIDS (IFB) AND CONTRACT

• Substitute and utilize the revised "FORMAL INVITATION FOR BIDS (IFB) AND CONTRACT" attached.

#### 020 BID FORM

• Substitute and utilize the revised "Bid Form" attached.

#### **025 UNIT PRICING FORM**

• Substitute and utilize the revised "Unit Pricing Form" attached.

## 050.01 SBEDA GUIDELINES:

• Replace and utilize the 050.01 SBEDA Guidelines attached hereto.

#### SUBCONTRACTOR/SUPPLIER UTILIZATION PLAN:

• Replace and utilize the Subcontractor/Supplier Utilization Plan attached hereto.

## **060 FORM**

• Substitute and utilize the revised "Supplemental Conditions" attached.

## **CLARIFICATIONS:**

## **QUESTION/ANSWER:**

• QUESTION: Will Maldonado Nursery & Landscaping, Inc. count towards the M/WBE subcontracting goal for this project?

ANSWER: No. Maldonado Nursery & Landscaping, Inc. will not count. To be counted as an M/WBE, a Prime or Subcontractor MUST also be certified as SBE. Maldonado Nursery &





Landscaping, Inc. is NOT certified as SBE. Therefore, Maldonado Nursery & Landscaping, Inc. WILL NOT count towards the M/WBE subcontracting goal for this project.

QUESTION: Will a Geotechnical Report be made available?

**ANSWER:** There is no new geotechnical report generated as part of this particular scope of work. The pavement design was based on a geotechnical report for Hardberger Park – Phase 3 construction. A copy of that report is attached for reference.

• QUESTION: How far down might it be necessary to drill in order to create functioning parking lot infiltration strips?

**ANSWER:** The attached Hardberger Park Phase 3 geotechnical report does not include any borings in the Phase IV project area. However, the Parks and Recreation Department recently dug a dry well within the adjacent dog park. During the excavation of that dry well it was noted that the sand layer targeted for the bottom of the infiltration bores was at 15-16' depth below grade. This depth should be assumed for borings in the Phase IV parking lot construction.

• QUESTION: Does the Parks Department want to retain the cleared trees for use within the park?

**ANSWER:** Yes, the Parks Department would like cleared trees to be turned into double (twice) ground mulch for use in the adjacent dog park. Mulch produced from clearing would be placed in an area coordinated with Natural Areas staff.

QUESTION: Can the CAD files be released to Contractors for bidding?

ANSWER: The CAD files will be released to the winning bidder prior to construction.

• QUESTION: For infiltration trenches over 5' in length but less than 10', how many holes need to be drilled?

**ANSWER:** The plans assume a minimum of 1 bore per trench. For trenches between 5' and 10' long, 2 bores will need to be drilled. Drilled bores and trenches are to be field located as necessary to avoid any trees on site.

## **DRAWINGS:**

#### PROJECT SIGN:

• Refer to attachment, "EXAMPLE" from City of San Antonio.

#### **ELECTRICAL:**

• Replace and utilize the revised electrical drawings E100, E200, and E300. The previous pole mounted transformer configuration has been replaced with a CPS padmount transformer and underground primary distribution duct bank.



## **CIVIL:**

- Replace and utilize the revised civil drawings C2.00 and C2.00A. Revisions are described below:
  - The fire lane striping of the existing asphalt access driveway from Blanco Road was recently painted. This striping is now shown as existing and a note has been added to the plans for the portion of striping that will need to be replaced for the construction of the parking lot driveway.
  - The existing conduit under the drive will be abandoned in place. A note has been added to sheet C2.00.



Note: Addenda Acknowledgement Form for Addendum 1 is attached herein. This form must be signed and submitted with the bid package.

RECEIPT OF ADDENDUM NUMBER(S) 1 IS HEREBY ACKNOWLEDGED FOR PLANS AND

SPECIFICATIONS FOR CONSTRUCTION OF <u>HARDBERGER PARK PHASE 4 (PARKING LOT) - 40-00430A</u>

FOR WHICH BIDS WILL BE OPENED ON TUESDAY, AUGUST 11, 2015 AT 2:00 P.M.

THIS ACKNOWLEDGEMENT MUST BE SIGNED AND RETURNED WITH THE BID PACKAGE.

Company Name:					
Address:					
City/State/Zip Code:					
Date:					
Signature					
Print Name/Title					

## **CITY OF SAN ANTONIO**

**Issued By: Transportation and Capital Improvements** 

ID NO.: 40-00430-05-03

## (010) FORMAL INVITATION FOR BIDS (IFB) to CONTRACT HARDBERGER PARK PHASE 4 (PARKING LOT) #40-00430A

Sealed bids, subject to the Terms and Conditions of this Invitation for Bids and other contract provisions, will be received at the Office of the City Clerk, City Hall, 100 Military Plaza, 2nd floor San Antonio, Tx 78205 until 2:00 P.M. CST on Tuesday, August 11, 2015 and publicly read aloud in City Council Chambers at 114 W. Commerce, Municipal Plaza Building. This is the solicitation deadline. Bids must be submitted in a sealed envelope and clearly marked with the due date of bid, bidder name, Project Name and ID NO. The City is not responsible for submissions not clearly and appropriately marked. Late submissions will be rejected and returned to bidder. A Non-Mandatory Pre-bid meeting will be held at 114 W. Commerce, San Antonio, TX 78205 in the 9<sup>th</sup> fl. conference room on Thursday, July 23, 2015 at 10:30 A.M. **Deadline for questions:** 4:00 P.M., July 30, 2015.

#### This invitation includes the following Contract Documents:

■ Subcontractor/Supplier Utilization Plan

responsible for incorrect information obtained through other sources.

010	Invitation for Bids and Contract Signature Page	060	Supplemental Conditions
020	Bid Form	075	Performance Bond
025	Unit Pricing Form	076	Payment Bond
040	Standard Instructions to Respondent	081	General Conditions for Construction Contracts
050.01	SBEDA Guidelines		Wage Decision

Plans, Specifications and Special Conditions may be purchased at a cost of \$100.00 per set (tax included) from the office of Pape-Dawson Engineers, Inc., 2000 NW Loop 410, Castle Hills, TX 78213; Phone: (210) 375-9000. No refund will be made for plan sets that are returned. Changes to Plans, Specifications and Special Conditions will be included in an addendum and will be posted on the web at http://www.sanantonio.gov/purchasing/biddingcontract/opportunities.aspx along with this solicitation. Bidder understands and agrees that bidder is responsible for obtaining addenda and adhering to all requirements in addenda. City is not

The following documents (fully completed and with original signatures) constitute the required information to be submitted as a part of the bid proposal:

- 010 Invitation for Bids and Contract Signature Page Bid Bond 1.) 4.)
- 2.) 020 Bid Form
- 3.) 025 **Unit Pricing Form**

- 5.) Signed Addenda Acknowledgement Forms

Date Issued: July 13, 2015

6.) Subcontractor/Supplier Utilization Plan

It is understood and agreed that the work is to be substantially completed on or before 120 calendar days. This project does not include hazardous environmental work. This project requires 1 project sign(s).

Small Business Economic Development Advocacy (SBEDA) Program Compliance – Respondents shall meet the subcontracting requirements as stated on Form 050.01 and on the Subcontractor/Supplier Utilization Plan posted with this solicitation on the City's website.

Wage Decision - Respondent shall meet the prevailing wage rate requirements established for this contract and shall reference the wage decision posted with this solicitation on the City's website.

The undersigned, by his/her signature, represents that he/she is authorized to bind the bidder to fully comply with Contract Documents for the amount(s) shown on the accompanying bid sheet(s). The work proposed to be done shall be accepted when fully completed and finished to the entire satisfaction of the City. The undersigned certifies all prices contained in this bid have been carefully checked and are submitted as correct and final. The bidder by submitting this bid and signing below, acknowledges that he/she has received & read the entire Bid and Contract document and agrees to be bound by the terms therein, has received all Addenda, and agrees to the terms, conditions, and requirements of the bidder's bid proposal and all documents listed in the tables above and the enabling Ordinance and associated documentation that form the entire Contract upon approval by the City Council.

Official Name of Company (legal):			
		Signer's Name:	
Original Signature of Person Authorized to Sign Bid/Contract	Date		(Please Print or Type)

## CITY OF SAN ANTONIO Project Name: Hardberger Park Phase 4 Parking Date Issued: July 27, 2015 ID NO.: 40-00430-05-03 The estimated construction budget for this contract is \$538,000 Page 1 of 1 020 **BID FORM** I. BASE BID Amount of Site Construction Base Bid (Insert Amount in Words and Numbers): **Total Amount of Base Bid (Insert Amount in Words and Numbers):** II. ALTERNATES Amount of each Alternates (if applicable) insert in Numbers: Additive Alternate #1 - The additional construction of 27 parking spaces Total Amount of Bid for Additive Alternate #1 (Insert Amount in Words and Numbers): III. UNIT PRICES Bidders shall submit unit pricing on the 025 Unit Pricing form, and it shall be attached immediately following this sheet. IV. ALLOWANCES (if applicable) Amount of each Allowance (if applicable) insert in Numbers: \$25,000.00 Allowance #1 - CPS Electrical (including Panels, Controls, Strong Box) Telephone No. Official Name of Company (legal) Address Fax No. City, State and Zip Code E-mail Address

Name of the proposed **Project Manager:** 

Name of the proposed **Site Superintendent:** 

## CITY OF SAN ANTONIO 025 UNIT PRICING FORM

PROJECT NAME: **Hardberger Park Phase 4 Parking** PROJECT NO. 40-00430A

ITEM NO.	BASE BID ITEM DESCRIPTION		UNIT BID PRICE
	The City only will accept bid pricing to the hundredths. Any pricing extended out to three decimal points will be truncated to two decimal points in the City's favor.		
1	General Conditions	Lump Sum	
2	Site Clearing and Grubbing	Lump Sum	
3	Embankment	CY	
4	Excavation	CY	
5	Haul-Off and Spread Excess Excavation (Ref. Notes C2.00 and L202)	CY	
6	Remove Existing Asphalt Sidewalk	Square Feet	
7	Tree Protection (Ref. Details 1 & 2 / L000)	Linear Feet	
8	Tree Pruning (Ref. Detail 4/ L000)	Lump Sum	
9	Sawcut & Remove Ex Curb	Linear Feet	
10	Truegrid Permeable Paving System (Ref. Detail 9/L301)	Square Feet	
11	GEOGRID Tensar TX5	SY	
12	6" Lime Stablized Subgrade	SY	
13	Compacted Flexible Base 8" Depth for Parking (Ref. Detail 9/L301)	Square Feet	
14	Compacted Flexible Base 9" Depth (Ref. Detail C3.00)	Square Feet	
15	2" Type D Asphalt	SY	
16	Concrete Curb (Flush) at Parking (Ref. Details C3.00)	Linear Feet	
17	Concrete Curb (Raised) (Ref. Details C3.00)	Linear Feet	
18	Concrete Paving 4" Depth (Ref. Datail 1/L301)	Square Feet	
19	Concrete Paving 6" Depth (Ref. Datail 7/L301)	Square Feet	
20	2" Decomposed Granite (Ref. Detail 9/L301)	Square Feet	
21	TPDES	Lump Sum	
22	Pipe Stem Wheel Stop (Ref. Details L302)	Linear Feet	
23	6" Pipe Bollard (Ref. Detail 5/L304)	Each	
24	Concrete Curb at Wheel Stop (Ref. Details L302)	Linear Feet	
25	Mulch (Ref. Detail 5/L401)	CY	
26	Limestone Bench (Ref. Detail 10/L302)	Linear Feet	
27	Limestone Cobble (Ref. Detail 1/L401)	CY	
28	Seeding Construction Disturbed Areas (Ref. Details L401)	Square Feet	

## CITY OF SAN ANTONIO 025 UNIT PRICING FORM

## PROJECT NAME: **Hardberger Park Phase 4 Parking** PROJECT NO. 40-00430A

	Data Salama (Induitar annual (and Induitar)	1	
	Restroom Enclosures (Including concrete foundation) (Ref. Detail 1/L305)	Lump Sum	
	Steel Edging at Parking (Ref. Detail 6/L302)	Linear Feet	
31	Metal Grate Curb Leaveout (Ref. Detail C3.00)	Linear Feet	
32	Fence Demolition	Linear Feet	
33	Dog Park Fence (Ref. Detail 1/L306)	Linear Feet	
34	Dog Park Gate (Ref. Detail 3/L306)	Each	
35	Dog Park Signage (Ref. Details 4 & 5 / L306)	Lump Sum	
36	Parks and Recreation Rules and Regulations Signage (Ref. Detail 7/L303)	Lump Sum	
37	Replace Fire Lane Striping at Entrance (Ref. Note C2.00 & Detail C3.01)	Linear Feet	
38	Infiltration Trench (Including cobble, trenching, & boring) (Ref. Detail 3/L304)	Linear Feet	
39	Bike Rack (Ref. Detail 2/L304)	Each	
40	Trash Receptacle (Ref. Detail 6/L304)	Each	
41	2' x 2' Detectable Warning Plates (Ref. Detail 5/L301)	Each	
42	Park Sign; Include Steel Framing, Supports, Concrete Footing, Solid Steel Panels (Ref. Detail 1/L304)	Lump Sum	
43	Limestone Block Base for Park Sign (Ref. Detail 1/L304)	CY	
44	3.5" Height Steel Sign Letters (Ref. Detail 1/L304)	Each	
45	2.5" Height Steel Sign Letters (Ref. Detail 1/L304)	Each	
46	Accessible Signage (Ref. Detail 4/L304)	Lump Sum	
47	Parking Lot Lighting	Each	
48	Conduits for Parking Lot Lighting (Ref. Detail 2/E300)	Linear Feet	
49	Vehicular Gate (Ref. Details 1/L303 and 3/L303)	Each	
50	Vehicular Gate Operator (Ref. Detail 5/L303)	Each	
ITEM NO.	ALTERNATE BID ITEM DESCRIPTION	UNIT OF MEASURE	UNIT BID PRICE
1	Site Clearing and Grubbing	Lump Sum	
2	Embankment	CY	
3	Excavation	CY	
4	Haul-Off and Spread Excess Excavation (Ref. Notes C2.00 and L202)	CY	
5	Tree Protection (Ref. Details 1 & 2 / L000)	Linear Feet	
6	Tree Pruning (Ref. Detail 4/ L000)	Lump Sum	
7	Truegrid Permeable Paving System (Ref. Detail 9/L301)	Square Feet	

## CITY OF SAN ANTONIO 025 UNIT PRICING FORM

PROJECT NAME: **Hardberger Park Phase 4 Parking** PROJECT NO. 40-00430A

8 GEOGRID Tensar TX5	SY	
9 6" Lime Stablized Subgrade	SY	
10 Compacted Flexible Base 8" Depth for Parking (Ref. Detail 9/L301)	Square Feet	
11 Concrete Curb (Flush) at Parking (Ref. Details C3.00)	Linear Feet	
12 2" Decomposed Granite (Ref. Detail 9/L301)	Square Feet	
13 Pipe Stem Wheel Stop	Linear Feet	
14 Concrete Curb at Wheel Stop	Linear Feet	
15 Limestone Cobble (Ref. Detail 1/L401)	CY	
16 Steel Edging at Parking (Ref. Detail 6/L302)	Linear Feet	
17 Infiltration Trench (Including cobble, trenching, & boring) (Ref. Detail 3/L304)	Linear Feet	
hereby certifies that the unit prices shown on this form in this bid proposal		
are the unit prices intended for this project. These unit prices are 'complete and in place', and include but are not limited to: necessary		
superintendence, labor, machinery, equipment, tools, materials, mobilization, insurance, overhead and other miscellaneous items and c		
work. It is further understood that these unit prices will be used by the City of San Antonio, at any time during the construction project, t		l bid and/or
contract amount through additions to or deletions from the scope and amount of work for the project, at the sole discretion of the City of	San Antonio.	
agrees to the terms, conditions, and requirements of the bidder's bid proposal.		
Signed: Date:		
Title:		

## Hardberger Park Phase 4 (Parking Lot)

## 050.01

## A. Solicitation Response and Contract Requirements and Commitment

Respondent understands and agrees that the following provisions shall be requirements of this solicitation and the resulting contract, if awarded, and by submitting its Response, Respondent commits to comply with these requirements. In the absence of a waiver granted by the SBO, failure of a Prime Contractor to commit in its response, through a fully-documented and signed SBO-promulgated Subcontractor/Supplier Utilization Plan form, to satisfying the S/M/WBE subcontracting goal shall render its response NON-RESPONSIVE.

Waiver Request - A Respondent may request, for good cause, a full or partial Waiver of a specified subcontracting goal included in this solicitation by submitting the *Respondent Subcontracting Waiver Request form (available at <a href="http://www.sanantonio.gov/SBO/Forms.aspx">http://www.sanantonio.gov/SBO/Forms.aspx</a>) with its solicitation response. The Respondent's Waiver request must fully document subcontractor unavailability despite the Respondent's good faith efforts to comply with the goal. Such documentation shall include all good faith efforts made by Respondent including, but not limited to, which subcontractors were contacted (with phone numbers, e-mail addresses and mailing addresses, as applicable) and the method of contact. Late Waiver requests will not be considered.* 

**Exception Request** - A Respondent may, for good cause, request an Exception to the application of the SBEDA Program if the Respondent submits the *Exception to SBEDA Program Requirements Request form (available at <a href="http://www.sanantonio.gov/SBO/Forms.aspx">http://www.sanantonio.gov/SBO/Forms.aspx</a>) with its solicitation response. The Respondent's Exception request must fully document why: (1) the value of the contract is below the \$50,000 threshold for application of the SBEDA Program; or (2) no commercially-useful subcontracting opportunities exist within the contract scope of work; or (3) the type of contract is outside of the scope of the SBEDA Ordinance. Late Exception Requests will not be considered.* 

## B. SBEDA Program

The CITY has adopted a Small Business Economic Development Advocacy Ordinance (Ordinance No. 2010-06-17-0531 and as amended, also referred to as "SBEDA" or "the SBEDA Program"), which is posted on the City's Economic Development (EDD) website page and is also available in hard copy form upon request to the CITY. The SBEDA Ordinance Compliance Provisions contained in this section of the Agreement are governed by the terms of this Ordinance, as well as by the terms of the SBEDA Ordinance Policy & Procedure Manual established by the CITY pursuant to this Ordinance, and any subsequent amendments to this referenced SBEDA Ordinance and SBEDA Policy & Procedure Manual that are effective as of the date of the execution of this Agreement. Unless defined in a contrary manner herein, terms used in this section of the Agreement shall be subject to the same expanded definitions and meanings as given those terms in the SBEDA Ordinance and as further interpreted in the SBEDA Policy & Procedure Manual.

## C. Definitions

Affirmative Procurement Initiatives (API) – Refers to various Small Business Enterprise, Minority Business Enterprise, and/or Women Business Enterprise ("S/M/WBE") Program tools and Solicitation Incentives that are used to encourage greater Prime and subcontract participation by S/M/WBE firms, including bonding assistance, evaluation preferences, subcontracting goals and joint venture incentives. (For full descriptions of these and other S/M/WBE program tools, see Section III. D. of Attachment A to the SBEDA Ordinance.)

Centralized Vendor Registration System (CVR) – a mandatory electronic system wherein the City requires <u>all</u> prospective Respondents and Subcontractors that are ready, willing and able to sell goods or services to the City to register. The CVR system assigns a unique identifier to each registrant that is then required for the purpose of submitting solicitation responses and invoices, and for receiving payments from the City. The CVR-assigned identifiers are also used by the Goal Setting Committee for measuring relative availability and tracking utilization of SBE and M/WBE firms by Industry or commodity codes, and for establishing Annual Aspirational Goals and Contract-by-Contract Subcontracting Goals.

Certification or "Certified" – the process by which the Small Business Office (SBO) staff determines a firm to be a bona-fide small, minority-, women-owned, or emerging small business enterprise. Emerging Small Business Enterprises (ESBEs) are automatically eligible for Certification as SBEs. Any firm may apply for multiple Certifications that cover each and every status category (e.g., SBE, ESBE, MBE, or WBE) for which it is able to satisfy eligibility standards. The SBO staff may contract these services to a regional Certification agency or other entity. For purposes of Certification, the City accepts any firm that is certified by local government entities and other organizations identified herein that have adopted Certification standards and procedures similar to those followed by the SBO, provided the prospective firm satisfies the eligibility requirements set forth in this Ordinance in Section III.E.6 of Attachment A

Commercially Useful Function – an S/M/WBE firm performs a Commercially Useful Function when it is responsible for execution of a distinct element of the work of the contract and is carrying out its responsibilities by actually performing, staffing, managing and supervising the work involved. To perform a Commercially Useful Function, the S/M/WBE firm must also be responsible, with respect to materials and supplies used on the contract, for negotiating price, determining quantity and quality, ordering the material, and installing (where applicable) and paying for the material itself. To determine whether an S/M/WBE firm is performing a Commercially Useful Function, an evaluation must be performed of the amount of work subcontracted, normal industry practices, whether the amount the S/M/WBE firm is to be paid under the contract is commensurate with the work it is actually performing and the S/M/WBE credit claimed for its performance of the work, and other relevant factors. Specifically, an S/M/WBE firm does not perform a Commercially Useful Function if its role is limited to that of an extra participant in a transaction, contract or project through which funds are passed in order to obtain the appearance of meaningful and useful S/M/WBE participation, when in similar transactions in which S/M/WBE firms do not participate, there is no such role performed. The use of S/M/WBE firms by CONTRACTOR to perform such "pass-through" or "conduit" functions that are not commercially useful shall be viewed by the CITY as fraudulent if CONTRACTOR attempts to obtain credit for such S/M/WBE participation towards the satisfaction of S/M/WBE participation goals or other API participation requirements. As such, under such circumstances where a commercially useful function is not actually performed by the S/M/WBE firm, the CONTRACTOR shall not be given credit for the participation of its S/M/WBE subcontractor or joint venture partner towards attainment of S/M/WBE utilization goals, and the CONTRACTOR and S/M/WBE firm may be subject to sanctions and penalties in accordance with the SBEDA Ordinance.

Good Faith Efforts – documentation of the CONTRACTOR's or Respondent's intent to comply with S/M/WBE Program Goals and procedures including, but not limited to, the following: (1) documentation within a solicitation response reflecting the Respondent's commitment to comply with SBE or M/WBE Program Goals as established by the GSC for a particular contract; or (2) documentation of efforts made toward achieving the SBE or M/WBE Program Goals (e.g., timely advertisements in appropriate trade publications and publications of wide general circulation; timely posting of SBE or M/WBE subcontract opportunities on the City of San Antonio website; solicitations of bids/proposals/qualification statements from all qualified SBE or M/WBE firms listed in the Small Business Office's directory of certified SBE or M/WBE firms; correspondence from qualified SBE or M/WBE firms documenting their unavailability to perform SBE or M/WBE contracts; documentation of efforts to subdivide work into smaller quantities for subcontracting purposes to enhance opportunities for SBE or M/WBE firms; documentation of a Prime Contractor's posting of a bond covering the work of SBE or M/WBE Subcontractors; documentation of efforts to assist SBE or M/WBE firms with obtaining financing, bonding or insurance required by the Respondent; and documentation of consultations with trade associations and consultants that represent the interests of SBE and/or M/WBEs in order to identify qualified and available SBE or M/WBE Subcontractors.) The appropriate form and content of CONTRACTOR's Good Faith Efforts documentation shall be in accordance with the SBEDA Ordinance as interpreted in the SBEDA Policy & Procedure Manual.

**HUBZone Firm** – a business that has been certified by U.S. Small Business Administration for participation in the federal HUBZone Program, as established under the 1997 Small Business Reauthorization Act. To qualify as a HUBZone firm, a small business must meet the following criteria: (1) it must be owned and Controlled by U.S. citizens; (2) at least 35 percent of its employees must reside in a HUBZone; and (3) its Principal Place of Business must be located in a HUBZone within the San Antonio Metropolitan Statistical Area. [See 13 C.F.R. 126.200 (1999).]

Independently Owned and Operated – ownership of an SBE firm must be direct, independent and by Individuals only. Ownership of an M/WBE firm may be by Individuals and/or by other businesses provided the ownership interests in the M/WBE firm can satisfy the M/WBE eligibility requirements for ownership and Control as specified herein in Section III.E.6. The M/WBE firm must also be Independently Owned and Operated in the sense that it cannot be the subsidiary of another firm that does not itself (and in combination with the certified M/WBE firm) satisfy the eligibility requirements for M/WBE Certification.

**Individual** – an adult person that is of legal majority age.

Industry Categories – procurement groupings for the City of San Antonio inclusive of Construction, Architectural & Engineering (A&E), Professional Services, Other Services, and

Goods & Supplies (i.e., manufacturing, wholesale and retail distribution of commodities). This term may sometimes be referred to as "business categories."

Minority/Women Business Enterprise (M/WBE) – firm that is certified as a Small Business Enterprise and also as either a Minority Business Enterprise or as a Women Business Enterprise, and which is at least fifty-one percent (51%) owned, managed and Controlled by one or more Minority Group Members and/or women, and that is ready, willing and able to sell goods or services that are purchased by the City of San Antonio.

**M/WBE Directory** – a listing of minority- and women-owned businesses that have been certified for participation in the City's M/WBE Program APIs.

**Minority Business Enterprise (MBE)** – any legal entity, except a joint venture, that is organized to engage in for-profit transactions, which is certified a Small Business Enterprise and also as being at least fifty-one percent (51%) owned, managed and controlled by one or more Minority Group Members, and that is ready, willing and able to sell goods or services that are purchased by the CITY. To qualify as an MBE, the enterprise shall meet the Significant Business Presence requirement as defined herein. Unless otherwise stated, the term "MBE" as used in this Ordinance is not inclusive of women-owned business enterprises (WBEs).

**Minority Group Members** – African-Americans, Hispanic Americans, Asian Americans and Native Americans legally residing in, or that are citizens of, the United States or its territories, as defined below:

<u>African-Americans</u>: Persons having origins in any of the black racial groups of Africa as well as those identified as Jamaican, Trinidadian, or West Indian.

<u>Hispanic-Americans</u>: Persons of Mexican, Puerto Rican, Cuban, Spanish or Central and South American origin.

<u>Asian-Americans</u>: Persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent or the Pacific Islands.

<u>Native Americans</u>: Persons having no less than  $1/16^{th}$  percentage origin in any of the Native American Tribes, as recognized by the U.S. Department of the Interior, Bureau of Indian Affairs and as demonstrated by possession of personal tribal role documents.

**Originating Department** – the CITY department or authorized representative of the CITY which issues solicitations or for which a solicitation is issued.

**Payment** – dollars actually paid to CONTRACTORS and/or Subcontractors and vendors for CITY contracted goods and/or services.

**Prime Contractor** – the vendor or contractor to whom a purchase order or contract is issued by the City of San Antonio for purposes of providing goods or services for the City. For purposes of this Agreement, this term refers to the CONTRACTOR.

**Relevant Marketplace** – the geographic market area affecting the S/M/WBE Program as determined for purposes of collecting data for the MGT Studies, and for determining eligibility

for participation under various programs established by the SBEDA Ordinance, is defined as the San Antonio Metropolitan Statistical Area (SAMSA), currently including the counties of Atascosa, Bandera, Bexar, Comal, Guadalupe, Kendall, Medina and Wilson.

**Respondent** – a vendor submitting a bid, statement of qualifications, or proposal in response to a solicitation issued by the City. For purposes of this Agreement, CONTRACTOR is the Respondent.

**Responsible** – a firm which is capable in all respects to fully perform the contract requirements and has the integrity and reliability which will assure good faith performance of contract specifications.

**Responsive** – a firm's submittal (bid, response or proposal) conforms in all material respects to the solicitation (Invitation for Bid, Request for Qualifications, or Request for Proposal) and shall include compliance with S/M/WBE Program requirements.

**San Antonio Metropolitan Statistical Area (SAMSA)** – also known as the Relevant Marketplace, the geographic market area from which the CITY's MGT Studies analyzed contract utilization and availability data for disparity (currently including the counties of Atascosa, Bandera, Bexar, Comal, Guadalupe, Kendall, Medina and Wilson).

**SBE Directory** - a listing of small businesses that have been certified for participation in the City's SBE Program APIs.

**Significant Business Presence** – to qualify for this Program, a S/M/WBE must be headquartered or have a *significant business presence* for at least one year within the Relevant Marketplace, defined as: an established place of business in one or more of the eight counties that make up the San Antonio Metropolitan Statistical Area (SAMSA), from which 20% of its full-time, part-time and contract employees are regularly based, and from which a substantial role in the S/M/WBE's performance of a Commercially Useful Function is conducted. A location utilized solely as a post office box, mail drop or telephone message center or any combination thereof, with no other substantial work function, shall not be construed to constitute a significant business presence.

Small Business Enterprise (SBE) – a corporation, partnership, sole proprietorship or other legal entity for the purpose of making a profit, which is Independently Owned and Operated by Individuals legally residing in, or that are citizens of, the United States or its territories, and which meets the U.S. Small Business Administration (SBA) size standard for a small business in its particular industry(ies) and meets the Significant Business Presence requirements as defined herein.

**Small Business Office (SBO)** – the office within the Economic Development Department (EDD) of the CITY that is primarily responsible for general oversight and administration of the S/M/WBE Program.

**Small Business Office Manager** – the Assistant Director of the EDD of the CITY that is responsible for the management of the SBO and ultimately responsible for oversight, tracking, monitoring, administration, implementation and reporting of the S/M/WBE Program. The SBO

Manager is also responsible for enforcement of contractor and vendor compliance with contract participation requirements, and ensuring that overall Program goals and objectives are met.

Small Minority Women Business Enterprise Program (S/M/WBE Program) – the combination of SBE Program and M/WBE Program features contained in the SBEDA Ordinance.

**Subcontractor** – any vendor or contractor that is providing goods or services to a Prime Contractor or CONTRACTOR in furtherance of the Prime Contractor's performance under a contract or purchase order with the City. A copy of each binding agreement between the CONTRACTOR and its subcontractors shall be submitted to the CITY prior to execution of this contract Agreement and any contract modification Agreement.

**Suspension** – the temporary stoppage of the SBE or M/WBE firm's beneficial participation in the CITY's S/M/WBE Program for a finite period of time due to cumulative contract payments the S/M/WBE firm received during a fiscal year that exceed a certain dollar threshold as set forth in Section III.E.7 of Attachment A to the SBEDA Ordinance, or the temporary stoppage of CONTRACTOR's and/or S/M/WBE firm's performance and payment under CITY contracts due to the CITY's imposition of Penalties and Sanctions set forth in Section III.E.13 of Attachment A to the SBEDA Ordinance.

Subcontractor/Supplier Utilization Plan – a binding part of this contract Agreement which states the CONTRACTOR's commitment for the use of Joint Venture Partners and / or Subcontractors/Suppliers in the performance of this contract Agreement, and states the name, scope of work, and dollar value of work to be performed by each of CONTRACTOR's Joint Venture partners and Subcontractors/Suppliers in the course of the performance of this contract, specifying the S/M/WBE Certification category for each Joint Venture partner and Subcontractor/Supplier, as approved by the SBO Manager. Additions, deletions or modifications of the Joint Venture partner or Subcontractor/Supplier names, scopes of work, of dollar values of work to be performed requires an amendment to this Agreement to be approved by the EDD Director or designee.

**Women Business Enterprises (WBEs)** - any legal entity, except a joint venture, that is organized to engage in for-profit transactions, that is certified for purposes of the SBEDA Ordinance as being a Small Business Enterprise and that is at least fifty-one percent (51%) owned, managed and Controlled by one or more non-minority women Individuals that are lawfully residing in, or are citizens of, the United States or its territories, that is ready, willing and able to sell goods or services that are purchased by the City and that meets the Significant Business Presence requirements as defined herein. Unless otherwise stated, the term "WBE" as used in this Agreement is not inclusive of MBEs.

## D. SBEDA Program Compliance – General Provisions

As CONTRACTOR acknowledges that the terms of the CITY's SBEDA Ordinance, as amended, together with all requirements, guidelines, and procedures set forth in the CITY's SBEDA Policy & Procedure Manual are in furtherance of the CITY's efforts at economic inclusion and, moreover, that such terms are part of CONTRACTOR's scope of work as referenced in the CITY's formal solicitation that formed the basis for contract award and subsequent execution of

this Agreement, these SBEDA Ordinance requirements, guidelines and procedures are hereby incorporated by reference into this Agreement, and are considered by the Parties to this Agreement to be material terms. CONTRACTOR voluntarily agrees to fully comply with these SBEDA program terms as a condition for being awarded this contract by the CITY. Without limitation, CONTRACTOR further agrees to the following terms as part of its contract compliance responsibilities under the SBEDA Program:

- 1. CONTRACTOR shall cooperate fully with the Small Business Office and other CITY departments in their data collection and monitoring efforts regarding CONTRACTOR's utilization and payment of Subcontractors, S/M/WBE firms, and HUBZone firms, as applicable, for their performance of Commercially Useful Functions on this contract including, but not limited to, the timely submission of completed forms and/or documentation promulgated by SBO, through the Originating Department, pursuant to the SBEDA Policy & Procedure Manual, timely entry of data into monitoring systems, and ensuring the timely compliance of its Subcontractors with this term;
- CONTRACTOR shall cooperate fully with any CITY or SBO investigation (and shall also respond truthfully and promptly to any CITY or SBO inquiry) regarding possible non-compliance with SBEDA requirements on the part of CONTRACTOR or its Subcontractors or suppliers;
- 3. CONTRACTOR shall permit the SBO, upon reasonable notice, to undertake inspections as necessary including, but not limited to, contract-related correspondence, records, documents, payroll records, daily logs, invoices, bills, cancelled checks, and work product, and to interview Subcontractors and workers to determine whether there has been a violation of the terms of this Agreement;
- 4. CONTRACTOR shall immediately notify the SBO, in writing on the Change to Utilization Plan form, through the Originating Department, of any proposed changes to CONTRACTOR's Subcontractor / Supplier Utilization Plan for this contract, with an explanation of the necessity for such proposed changes, including documentation of Good Faith Efforts made by CONTRACTOR to replace the Subcontractor / Supplier in accordance with the applicable Affirmative Procurement Initiative. All proposed changes to the Subcontractor / Supplier Utilization Plan including, but not limited to, proposed self-performance of work by CONTRACTOR of work previously designated for performance by Subcontractor or supplier, substitutions of new Subcontractors, terminations of previously designated Subcontractors, reductions in the scope of work and value of work awarded to Subcontractors or suppliers, shall be subject to advanced written

approval by the Originating Department and the SBO.

- 5. CONTRACTOR shall immediately notify the Originating Department and SBO of any transfer or assignment of its contract with the CITY, as well as any transfer or change in its ownership or business structure.
- 6. CONTRACTOR shall retain all records of its Subcontractor payments for this contract for a minimum of four years, or as required by state law, following the conclusion of this contract or, in the event of litigation concerning this contract, for a minimum of four years, or as required by state law, following the final determination of litigation, whichever is later.
- 7. In instances wherein the SBO determines that a Commercially Useful Function is not actually being performed by the applicable S/M/WBE or HUBZone firms listed in a CONTRACTOR's Subcontractor / Supplier Utilization Plan, the CONTRACTOR shall not be given credit for the participation of its S/M/WBE or HUBZone subcontractor(s) or joint venture partner(s) toward attainment of S/M/WBE or HUBZone firm utilization goals, and the CONTRACTOR and its listed S/M/WBE firms or HUBZone firms may be subject to sanctions and penalties in accordance with the SBEDA Ordinance.
- 8. CONTRACTOR acknowledges that the CITY will not execute a contract or issue a Notice to Proceed for this project until the CONTRACTOR and each of its Subcontractors for this project have registered and/or maintained active status in the CITY's Centralized Vendor Registration System, and CONTRACTOR has represented to CITY which primary commodity codes each registered Subcontractor will be performing under for this contract.

## E. SBEDA Program Compliance – Affirmative Procurement Initiatives

The CITY has applied the following contract-specific Affirmative Procurement Initiative (API) to this contract. CONTRACTOR hereby acknowledges and agrees that the selected API requirement shall also be extended to any change order or subsequent contract modification and, absent SBO's granting of a waiver, that its full compliance with the following API terms and conditions are material to its satisfactory performance under this Agreement:

M/WBE Subcontracting Program. In accordance with SBEDA Ordinance Section III. D. 2. (b), this contract is being awarded pursuant to the M/WBE Subcontracting Program. CONTRACTOR agrees to subcontract at least **eighteen percent (18%)** of its prime contract value to certified M/WBE firms headquartered or having a significant business presence within the San Antonio Metropolitan Statistical Area (SAMSA).

**Segmented M/WBE Goal.** In accordance with SBEDA Ordinance Section III. D. 2. (d), this contract is being awarded pursuant to Segmented M/WBE Goals. CONTRACTOR agrees to subcontract at least *two percent* (2%) of the contract value to a certified African American Business Enterprise (AABE) firm headquartered or having a significant business presence within the San Antonio Metropolitan Statistical Area (SAMSA). This two percent (2%) subcontracting goal will also count toward the aforementioned eighteen percent (18%) M/WBE subcontracting goal.

The Subcontractor / Supplier Utilization Plan that CONTRACTOR submitted to CITY with its response for this contract (or, as appropriate, that it agrees to submit during the price proposal negotiation phase of this contract), and that contains the names of the certified M/WBE and AABE Subcontractors to be used by CONTRACTOR on this contract, the respective percentages of the total prime contract dollar value to be awarded and performed by each M/WBE and AABE Subcontractor, and documentation including a description of each M/WBE and AABE Subcontractor's scope of work and confirmation of each M/WBE and AABE Subcontractor's commitment to perform such scope of work for an agreed upon dollar amount is hereby attached and incorporated by reference into the material terms of this Agreement. In the absence of a waiver granted by the SBO, the failure of CONTRACTOR to attain this subcontracting goal for M/WBE and AABE firm participation in the performance of a Commercially Useful Function under the terms of its contract shall be a material breach and grounds for termination of the contract with the CITY, and may result in debarment from performing future CITY contracts, withholding of payment for retainage equal to the dollar amount of the underutilization below the agreed upon M/WBE and AABE subcontracting goal, and/or shall be subject to any other remedies available under the terms of this Agreement for violations of the SBEDA Ordinance, or under any other law.

**Subcontractor Diversity**: The City of San Antonio strongly encourages each bidder to be as inclusive as possible, and to reach out to all segments of the M/WBE community in its efforts to exercise good faith in achieving the M/WBE subcontracting goal of 18% and AABE Subcontracting goal of 2% that have been established for this contract. While the relative availability of ready, willing, and able firms within various ethnic and gender categories will vary significantly from contract to contract based upon the particular trades that are involved, overall in the San Antonio Construction industry, as reflected in the City's Centralized Vendor Registration system for the month of June 2015, African-American owned firms represent approximately 2.82% of available subcontractors, Hispanic-American firms represent approximately 16.19%, Asian-American firms represent approximately 1.22%, Native American firms represent approximately 0.19%, and Women-owned firms represent approximately 5.05% of available construction subcontractors.

## F. Commercial Nondiscrimination Policy Compliance

As a condition of entering into this Agreement, the CONTRACTOR represents and warrants that it has complied with throughout the course of this solicitation and contract award process, and will continue to comply with, the CITY's Commercial Nondiscrimination Policy, as described under Section III. C. 1. of the SBEDA Ordinance. As part of such compliance, CONTRACTOR shall not discriminate on the basis of race, color, religion, ancestry or national origin, sex, age, marital status, sexual orientation or, on the basis of disability or other unlawful forms of

discrimination in the solicitation, selection, hiring or commercial treatment of Subcontractors, vendors, suppliers, or commercial customers, nor shall the company retaliate against any person for reporting instances of such discrimination. The company shall provide equal opportunity for Subcontractors, vendors and suppliers to participate in all of its public sector and private sector subcontracting and supply opportunities, provided that nothing contained in this clause shall prohibit or limit otherwise lawful efforts to remedy the effects of marketplace discrimination that have occurred or are occurring in the CITY's Relevant Marketplace. The company understands and agrees that a material violation of this clause shall be considered a material breach of this Agreement and may result in termination of this Agreement, disqualification of the company from participating in CITY contracts, or other sanctions. This clause is not enforceable by or for the benefit of, and creates no obligation to, any third party. CONTRACTOR's certification of its compliance with this Commercial Nondiscrimination Policy as submitted to the CITY pursuant to the solicitation for this contract is hereby incorporated into the material terms of this Agreement. CONTRACTOR shall incorporate this clause into each of its Subcontractor and supplier agreements entered into pursuant to CITY contracts.

## G. Prompt Payment

Upon execution of this contract by CONTRACTOR, CONTRACTOR shall be required to submit to CITY accurate progress payment information with each invoice regarding each of its Subcontractors, including HUBZone Subcontractors, to ensure that the CONTRACTOR's reported subcontract participation is accurate. CONTRACTOR shall pay its Subcontractors in compliance with Chapter 2251, Texas Government Code (the "Prompt Payment Act") within ten days of receipt of payment from CITY. In the event of CONTRACTOR's noncompliance with these prompt payment provisions, no final retainage on the Prime Contract shall be released to CONTRACTOR, and no new CITY contracts shall be issued to the CONTRACTOR until the CITY's audit of previous subcontract payments is complete and payments are verified to be in accordance with the specifications of the contract.

## H. Violations, Sanctions and Penalties

In addition to the above terms, CONTRACTOR acknowledges and agrees that it is a violation of the SBEDA Ordinance and a material breach of this Agreement to:

- 1. Fraudulently obtain, retain, or attempt to obtain, or aid another in fraudulently obtaining, retaining, or attempting to obtain or retain Certification status as an SBE, MBE, WBE, M/WBE, HUBZone firm, Emerging M/WBE, or ESBE for purposes of benefitting from the SBEDA Ordinance;
- 2. Willfully falsify, conceal or cover up by a trick, scheme or device, a material fact or make any false, fictitious or fraudulent statements or representations, or make use of any false writing or document, knowing the same to contain any false, fictitious or fraudulent statement or entry pursuant to the terms of the SBEDA Ordinance;
- 3. Willfully obstruct, impede or attempt to obstruct or impede any authorized official or employee who is investigating the qualifications of a business entity which has requested Certification as an S/M/WBE or HUBZone firm;

- 4. Fraudulently obtain, attempt to obtain or aid another person fraudulently obtaining or attempting to obtain public monies to which the person is not entitled under the terms of the SBEDA Ordinance; and
- 5. Make false statements to any entity that any other entity is, or is not, certified as an S/M/WBE for purposes of the SBEDA Ordinance.

Any person who violates the provisions of this section shall be subject to the provisions of Section III. E. 13. of the SBEDA Ordinance and any other penalties, sanctions and remedies available under law including, but not limited to:

- 1. Suspension of contract;
- 2. Withholding of funds;
- 3. Rescission of contract based upon a material breach of contract pertaining to S/M/WBE Program compliance;
- 4. Refusal to accept a response or proposal; and
- 5. Disqualification of CONTRACTOR or other business firm from eligibility for providing goods or services to the City for a period not to exceed two years (upon City Council approval).



# CITY OF SAN ANTONIO SUBCONTRACTOR/SUPPLIER UTILIZATION PLAN

SOLICITATION NAME:	Hardberger Park P	hase IV Parking Lot			
RESPONDENT NAME:					
SOLICITATION API:	Minority / Women- Subcontracting Pro	<del>-</del>	e (M/WBE) Subconti	racting Program and African Ai	nerican Business Enterprise (AABE)
eighteen (18%) subcontra Professional Services & M/WBE subcontracting go Pursuant to the SBEDA (	espondents must dem acting goal is to be su Other Services) as ide oal. Ordinance, M/WBEs a	nonstrate commitment to satisfy ubcontracted to <b>AABE firms</b> . Sentified by the availability in the nd AABEs must also be certified.	Segmented AABE go e Central Vendor Re ed as SBEs with the S	oals target the participation of AAI gistry. Participation by AABE subc	pal. Moreover, two percent (2%) out of the BEs within select industries (Construction ontractors automatically counts toward the ification Agency (SCTRCA) and be loals.
	the company name, S				neet subcontracting requirements must be e of participation on the contract, and
		Il Business Office, failure of a lification, please contact Ruber			BE subcontracting goals shall render its
		Enter Respondent's (	(Prime) proposed conti	act participation level.	
		PARTICIPATION DOLLAR AMOUNT	% LEVEL OF PARTICIPATION	CERTIFICATION TYPE AND NUMBER	TYPE OF WORK TO BE PERFORMED (BY NIGP CODE)
Prime:		\$	%		
SAePS Vendor #:				SCTRCA #:	
List ALL subcontractor	rs/suppliers that will be	utilized for the entire contract pe	eriod, excluding possib	le extensions, renewals and/or alterr	nates. Use additional pages if necessary.
Sub:		\$	%		
SAePS Vendor #:				SCTRCA #:	
Sub:		\$	%		
SAePS Vendor #:				SCTRCA #:	
Sub:		\$	%		
SAePS Vendor #:				SCTRCA #:	

<sup>\*\*</sup> Prime respondent and all subcontractors/suppliers must be registered in the City of San Antonio Electronic Procurement System (SAePS). To learn more about how to register, please call (210) 207-0118 or visit <a href="http://www.sanantonio.gov/purchasing/saeps.aspx">http://www.sanantonio.gov/purchasing/saeps.aspx</a>.

Sub:	\$	%		
SAePS Vendor #:			SCTRCA #:	
Sub:	\$	%		
SAePS Vendor #:			SCTRCA #:	
Sub:	\$	%		
SAePS Vendor #:			SCTRCA #:	
Sub:	\$	%		
SAePS Vendor #:			SCTRCA #:	
Sub:	\$	%		
SAePS Vendor #:			SCTRCA #:	
A.Total Prime Participation:	\$	%	А. Total base bid amount to be kept by р	orime.
B.Total Sub Participation:	\$	%		d and non-certified subcontractors/suppliers
C.Total Certified Sub Participation:	\$	%	C. Total amount prime will pay to certifie requirements stated above	d subcontractors/suppliers per the eligibility
D.Total Prime & Sub Participation*:	\$	%	D. Total prime and subcontractor(s)/sup amount (A+B)	olier(s) participation must equal your base bid
If a business is not certified, please call the Scertification.	mall Business Program Office	at (210) 207-3900 for	information and details on how su	ubcontractors and suppliers may obtain
I HEREBY AFFIRM THAT I POSSESS DOCUM OF WORK FOR THE PRICE INDICATED ABOV BELIEF. I UNDERSTAND AND AGREE THAT, CONTRACT.	/E. I FURTHER AFFIRM THAT	THE ABOVE INFORM	MATION IS TRUE AND COMPLETE	TO THE BEST OF MY KNOWLEDGE AN
Print Name: Date:	Sign:		Title:	
FOR CITY USE	***********	********	************	*************
Action Taken: Approved	Denied			

ASSISTANT DIRECTOR ECONOMIC DEVELOPMENT DEPARTMENT

## SUPPLEMENTAL CONDITIONS

- 1. When submitting a bid in person, visitors to City Hall must allow time for security measures. Visitors to City Hall will be required to enter through the east side of the building. The public will pass through a metal detector and x-ray machine located in the lobby. All packages, purses and carried items will be scanned during regular business hours of 7 a.m. to 7 p.m. After the public proceeds through the metal detector, they will sign in and receive a visitor's badge. For those that might require the use of a ramp, entry is available on the south side of the building (Dolorosa side). Security will meet the visitor in the basement with a hand scanner.
- 2. Scope of the Work The Contractor shall furnish all the materials and perform all the Work called for in the Contract Documents and more specifically described in the Plans and Specification for the Project entitled.
- 3. The Contractor shall begin Work at the job site within seven (7) calendar days after the date of the Owner's written Authorization to Proceed issued by the Owner's Representative.
- 4. Liquidated Damages for Delay in Substantial Completion & Final Completion: Contractor shall pay Owner the sum indicated on the table below for each and every calendar day of unexcused delay in achieving Substantial Completion/Final Completion beyond the Scheduled Completion/Final Completion Dates. Any sums due and payable hereunder by Contractor shall be payable, not as a penalty, but as Liquidated Damages representing an estimate of delay damages likely to be sustained by Owner, estimated at the time of executing the Contract. Such Liquidated Damages shall apply regardless of whether Contractor has been terminated by Owner prior to Substantial Completion, so long as Contractor's actions or inactions contributed to the delay. Such Liquidated Damages shall be in addition to and not in preclusion of any recovery of actual damages resulting from other defects in Contractor's performance hereunder for matters other than delays in Substantial Completion/Final Completion. When Owner reasonably believes that Substantial Completion/Final Completion will be inexcusably delayed, Owner shall be entitled, but not required, to withhold from any amounts otherwise due to Contractor an amount then believed by Owner to be adequate to recover liquidated damages applicable to such delays. If and when Contractor overcomes the delay in achieving Substantial Completion/Final Completion, or any part thereof, for which Owner has withheld payment, Owner promptly shall release to Contractor those funds withheld but no longer applicable as Liquidated Damages.

**Liquidated Damages** 

=-1					
Contractual Milestone	Contractual Milestone Description and Requirements		То	Liquidated Damages	
1	Substantial Completion	NTP	120 calendar days	<b>\$700.00</b> per day	
2	Final Completion	Substantial Completion	30 calendar days	<b>\$450.00</b> per day	

- 5. The Contract Sum The Owner shall pay the Contractor for the proper performance of the Contract, subject to additions and deduction provided therein, the Contract sum is listed in the Purchase Order.
- 6. Partial Payment Each month, the Owner shall make a progress payment as approved by the Owner's Representative in accordance with the General Conditions.
- 7. Acceptance and Final Payment Final Payment shall be due on final Owner acceptance of the Project Work, provided the Contract has been completed by Contractor as provided in the General Conditions. Before issuance of the final payment, the Contractor shall submit an affidavit and reasonable additional supporting evidence if required, as satisfactory to the Director of Finance, City of San Antonio, that all labor payrolls, construction materials and supply bills, subcontractors, and other indebtedness connected with the Work have been paid in full, or that an outstanding debt is being disputed and that the corporate surety or its agent is processing the outstanding claim and is willing to defend and/or indemnify the City should the City make final Contract payment.
- 8. Contractor shall comply with Standard Specification 1000 in its invoicing.

Project Name: Hardberger Park Phase 4 (Parking Lot)

Project No.: 40-00430A



Project No. ASA11-065-00 September 30, 2011 Raba-Kistner Consultants, Inc.
12821 W. Golden Lane, San Antonio, TX 78249
P.O. Box 690287, San Antonio, TX 78269-0287
(210) 699-9090 • FAX (210) 699-6426

www.rkci.com

TBPE Firm F-3257

Mr. Pat Schneider Capital Improvements Management Services Department City of San Antonio P.O. Box 839966 San Antonio, Texas 78283-3966

RE:

Geotechnical Engineering Study Hardberger Park – Phase 3

San Antonio, Texas

Dear Mr. Schneider:

Raba-Kistner Consultants Inc. (R-K) is pleased to submit the report of our Geotechnical Engineering Study for the above-referenced project. This study was performed in accordance with Contract No. 4600009436 under WBS 40-00134-05-07 GL 5201140 dated August 15, 2011. The purpose of this study was to drill borings within the proposed new Urban Ecology Center and ancillary driveway and parking area pavements, to perform laboratory testing to classify and characterize subsurface conditions, and to prepare an engineering report presenting foundation design and construction recommendations for the proposed park improvements, as well as to provide pavement design and construction guidelines.

The following report contains our design recommendations and considerations based on our current understanding of the project information provided to us. There may be alternatives for value engineering of the foundation and pavement systems, and R-K recommends that a meeting be held with the Owner and design team to evaluate these alternatives.

We appreciate the opportunity to be of service to you on this project. Should you have any questions about the information presented in this report, or if we may be of additional assistance with value engineering or on the materials testing-quality control program during construction, please call.

Very truly yours,

RABA-KISTNER CONSULTANTS, INC.

T. Ian Perez, P.E. Project Engineer

TIP/CLS/mem

Attachments

Copies Submitted:

Above (3)

O:\Active Projects\San Antonio\ASA11-065-00 Hardberger Park, Phase 3\Reporting\ASA11-065-00 Report.doc

GEO100 01/20/2009

Chris L. Schultz, P.

Senior Vice President

## **GEOTECHNICAL ENGINEERING STUDY**

For

## HARDBERGER PARK – PHASE 3 SAN ANTONIO, TEXAS

Prepared for

CITY OF SAN ANTONIO San Antonio, Texas

Prepared by

RABA-KISTNER CONSULTANTS, INC. San Antonio, Texas

**PROJECT NO. ASA11-065-00** 

September 30, 2011

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Project No. ASA11-065-00 September 30, 2011

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## **ATTACHMENTS**

Boring Location Map Logs of Borings Key to Terms and Symbols Results of Soil Analyses Important Information About Your Geotechnical Engineering Report

#### INTRODUCTION

Raba-Kistner Consultants Inc. (R-K) has completed the authorized subsurface exploration and foundation analysis for the proposed improvements to the existing Hardberger Park located east of the intersection of Northwest Military Highway and Alon Loop in San Antonio, Texas. This report briefly describes the procedures utilized during this study and presents our findings along with our recommendations for foundation design and construction considerations, as well as for pavement design and construction guidelines.

#### PROJECT DESCRIPTION

The facilities being considered in this study include a new Urban Ecology Center with ancillary driveway and parking area pavements at the existing Hardberger Park located east of the intersection of Northwest Military Highway and Alon Loop in San Antonio, Texas. On the basis of the "Request for Geotechnical Engineering Services" dated June 6, 2011 and provided by Mr. Matt Wallace, AIA with Lake/Flato Architects, Inc. (L/F), the following is our understanding of the project:

- The proposed structures consist of single level buildings and canopies at grade;
- The concentrated column service loads will be on the order of 2 to 50 kips;
- Bearing wall service loads will be on the order of 1 to 5 kips/ft; and
- Heave and settlement should be limited to 3/4 in.

On the basis of existing topography and proposed grading plans provided by Mr. Ryan Jones, AIA with L/F via email on September 28, 2011, it is our understanding that the ground floor elevation of the proposed buildings will be at or near an elevation of 918 ft. The topographic low and high within the proposed building footprint area is approximately 916 and 920 ft, respectively, which will result in cut and fill grading on the order of 2 ft required to achieve the anticipated ground floor elevation. The pavements at this site are anticipated to consist solely of passenger vehicles and the parking lot capacity is anticipated to be on the order of 95 vehicles.

On the basis of a phone conversation with Mr. Richard Liu, P.E. with Architectural Engineers Collaborative on September 30, 2011, it is our understanding that the single-story buildings will be constructed with a steel frame and masonry walls. No basement walls are planned for these structures. The canopies are also anticipated to be constructed with a steel frame.

#### LIMITATIONS

This engineering report has been prepared in accordance with accepted Geotechnical Engineering practices in the region of south/central Texas and for the use of the City of San Antonio (COSA) and its representatives for design purposes. This report may not contain sufficient information for purposes of other parties or other uses. This report is not intended for use in determining construction means and methods.

The recommendations submitted in this report are based on the data obtained from six borings drilled at this site, our understanding of the project information provided to us, and the assumption that site grading will result in only minor changes in the existing topography, as

discussed. If the project information described in this report is incorrect, is altered, or if new information is available, we should be retained to review and modify our recommendations.

This report may not reflect the actual variations of the subsurface conditions across the site. The nature and extent of variations across the site may not become evident until construction commences. The construction process itself may also alter subsurface conditions. If variations appear evident at the time of construction, it may be necessary to reevaluate our recommendations after performing on-site observations and tests to establish the engineering impact of the variations.

The scope of our Geotechnical Engineering Study does not include an environmental assessment of the air, soil, rock, or water conditions either on or adjacent to the site. No environmental opinions are presented in this report.

If final grade elevations are significantly different from those discussed in this report (more than plus or minus 1 ft), our office should be informed about these changes. If needed and/or if desired, we will reexamine our analyses and make supplemental recommendations.

## **BORINGS AND LABORATORY TESTS**

Subsurface conditions at the site were evaluated by 6 borings drilled at the locations shown on the Boring Location Map, Figure 1. These locations are approximate and distances were measured using tape, angles, pacing, etc. from known tree surveys. The borings were drilled using a truck-mounted drilling rig to approximate depths of 5 and 20 ft below the existing ground surface for the pavement and structural borings, respectively. During drilling operations, the following samples were collected:

Type of Sample	Number Collected
Auger Cuttings (Grab Samples)	6
Split-Spoon (with Standard Penetration Test)	27

Each sample was visually classified in the laboratory by a member of our Geotechnical Engineering staff. The geotechnical engineering properties of the strata were evaluated by the following tests:

Type of Test	Number Conducted
Natural Moisture Content	27
Atterberg Limits	9

The results of all laboratory tests are presented in graphical or numerical form on the boring logs illustrated on Figures 2 through 7. A key to classification terms and symbols used on the logs is presented on Figure 8. The results of the laboratory and field testing are also tabulated on Figure 9 for ease of reference.

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Standard penetration test results are noted as "blows per ft" on the boring logs and Figure 9, where "blows per ft" refers to the number of blows by a falling hammer required for 1 ft of penetration into the soil/weak rock. Where hard or dense materials were encountered, the tests were terminated at 50 blows even if one foot of penetration had not been achieved. When all 50 blows fall within the first 6 in. (seating blows), refusal "ref" for 6 in. or less will be noted on the boring logs and on Figure 9.

Samples will be retained in our laboratory for 30 days after submittal of this report. Other arrangements may be provided at the request of the Client.

## **GENERAL SITE CONDITIONS**

## SITE DESCRIPTION

The project site is a city park located east of the intersection of Northwest Military Highway and Alon Loop in San Antonio, Texas. The site of the proposed development is heavily wooded, with no existing structures with the exception of walking trails which traverse the site. The topography generally slopes downward toward the east with vertical relief of about 24 ft across the site and about 4 ft across the area of proposed building footprints. Surface drainage is visually estimated to range from fair to good.

## **GEOLOGY**

A review of the *Geologic Atlas of Texas, San Antonio Sheet*, indicates that this site is naturally underlain with the soils/rock of the Austin Chalk which is a form of limestone with intermittent seams of chalky marl and clay. Compared to other limestone formations in the San Antonio area such as Edwards Limestone, the Austin Chalk is comparatively softer in induration but is still considered a very hard rock substance and often contains harder, massive seams, layers, and/or ridges. The Austin Chalk also can contain karstic features in the form of open and/or clay-filled vugs, voids, and/or solution cavities that form as a result of solution movement through fractures in the rock mass.

Key geotechnical engineering considerations for development supported on this formation will be the depth to rock, the expansive nature of the overlying clays, the condition of the rock, and the presence/absence of karstic features.

#### SEISMIC COEFFICIENTS

Based upon a review of Section 1613 *Earthquake Loads – Site Ground Motion* of the 2006 International Building Code, the following information has been summarized for seismic considerations associated with this site. In the "Request for Geotechnical Engineering Services" referenced previously, we have been asked to provide the seismic coefficients based on a Site Class Definition of Class F. However, based on our borings completed for this study and our understanding of the geology in this area of San Antonio, we have assigned a Site Class Definition of Class B.

- Site Class Definition (Table 1613.5.2): Class B. Based on the soil borings conducted for this investigation, the upper 100 feet of soil may be characterized as rock.
- Mapped Maximum Considered Earthquake Ground Motion for a 0.2 sec Spectral Response Acceleration (Figure 1613.5(1)):  $S_s = S_{ms} = 0.101g$ . Note that the value taken from Figure 1613.5(1) is based on Site Class B and no adjustment is required.
- Mapped Maximum Considered Earthquake Ground Motion for a 1 sec Spectral Response Acceleration (Figure 1613.5(2)):  $S_1 = S_{m1} = 0.030g$ . Note that the value taken from Figure 1613.5(2) is based on Site Class B and are no adjustment is required.

The Design Spectral Response Acceleration Parameters are as follows:

- 0.2 sec, based on equation 16-39: S<sub>DS</sub> = 0.067
- 1 sec, based on equation 16-40: **S**<sub>D1</sub> = **0.020**

Based on the parameters listed above, Tables 1613.5.6(1) and 1613.5.6(2), the Seismic Design Category for both short period and 1 second response accelerations is **A**. However, without more information, we are not able to discern the Seismic Use Group, which will be one of the following four choices; I, II, III, or IV.

#### STRATIGRAPHY

The subsurface stratigraphy at this site can generally be described as dark brown clay overlying tan clay and marly clay with calcareous deposits. Limestone and marl were encountered in the deeper borings, Borings B-4 and B-5, below the tan clay and marly clay. The boring logs should be consulted for more specific stratigraphic information. Each stratum has been designated by grouping soils that possess similar physical and engineering characteristics. The lines designating the interfaces between strata on the boring logs represent approximate boundaries. Transitions between strata may be gradual.

## **GROUNDWATER**

Groundwater was not observed in the borings either during or immediately upon completion of the drilling operations. All borings remained dry during the field exploration phase. However; it should be noted that the borings were drilled during a prolonged drought period and it is possible for groundwater to exist beneath this site at shallow depths on a transient basis, particularly at the interfaces between the clay and marl/marly clays or limestone following periods of precipitation. Fluctuations in groundwater levels occur due to variation in rainfall and surface water run-off. The construction process itself may also cause variations in the groundwater level.

#### FOUNDATION ANALYSIS

## **EXPANSIVE SOIL-RELATED MOVEMENTS**

The anticipated ground movements due to swelling of the underlying soils at the site were estimated for slab-on-grade construction using the empirical procedure, Texas Department of Transportation (TxDOT) Tex-124-E, Method for Determining the Potential Vertical Rise (PVR). PVR values ranging from 1-1/4 to 2-1/2 in. were estimated for the stratigraphic conditions encountered in our borings. A surcharge load of 1 psi (concrete slab and sand cushion), an active zone of 15 ft (or to the top of the limestone elevation), and dry moisture conditions were assumed in estimating the above PVR values.

The TxDOT method of estimating expansive soil-related movements is based on empirical correlations utilizing the measured plasticity indices and assuming typical seasonal fluctuations in moisture content. If desired, other methods of estimating expansive soil-related movements are available, such as estimations based on swell tests and/or soil-suction analyses. However, the performance of these tests and the detailed analysis of expansive soil-related movements were beyond the scope of the current study. It should also be noted that actual movements can exceed the calculated PVR values due to isolated changes in moisture content (such as due to leaks, landscape watering....) or if water seeps into the soils to greater depths than the assumed active zone depth due to deep trenching or excavations.

## OVEREXCAVATION AND SELECT FILL REPLACEMENT

To reduce expansive soil-related movements in at-grade construction, a portion of the upper highly expansive subgrade clays within and 3 ft around the proposed building footprints can be removed by overexcavating and backfilling with a suitable select fill material. In order to reduce the expansive soil-related movements to on the order of 3/4 in. or less, as described in the "Request for Geotechnical Engineering Services" document referenced previously, we recommend that the surficial soils be overexcavated to an elevation of 915 ft or to a depth sufficient to completely remove the dark brown clays, whichever is deeper, and replaced with select fill up to the final subgrade elevation. It should be noted that the depth of the dark brown clays was relatively shallow in the borings drilled in the proposed structure area. However, deeper dark brown clays were encountered in the pavement borings, and it is anticipated that deeper clays may be encountered in the building footprint area as well. For estimating purposes, we recommend that it be assumed that a minimum of 3 ft of dark brown clays will be present which will require excavations extending below El. 915 ft in the fill areas of the building footprint.

To maintain reduced PVR values, subsequent fill placed in the building area should consist of select fill material in accordance with the *Select Fill* section of this report. We estimate total settlement of the fill material to be on the order of 1/2 to 3/4 in., 50 percent of which will occur during construction. The differential settlement can reasonably be estimated to be on the order of 1/2 of the total settlements.

## **Drainage Considerations**

When overexcavation and select fill replacement is selected as a method to reduce the potential for expansive soil-related movements at any site, considerations of surface and subsurface drainage may be crucial to construction and adequate foundation performance of the soil-supported structures. Water entering the fill surface during construction or entering the fill exposed beyond the building lines after construction may create problems with fill moisture control during compaction and increased access for moisture both during and after construction.

Several surface and subsurface drainage design features and construction precautions can be used to limit problems associated with fill moisture. These features and precautions may include but are not limited to the following:

- Installing berms or swales on the uphill side of the construction area to divert surface runoff away from the excavation/fill area during construction;
- Sloping of the top of the subgrade with a minimum downward slope of 1.5
  percent out to the base of a dewatering trench located beyond the building
  perimeter;
- Sloping the surface of the fill during construction to promote runoff of rain water to drainage features until the final lift is placed;
- Sloping of a final, well maintained, impervious clay or pavement surface (downward away from the building) over the select fill material and any perimeter drain extending beyond the building lines, with a minimum gradient of 6 in. in 5 ft;
- Constructing final surface drainage patterns to prevent ponding and limit surface water infiltration at and around the building perimeter;
- Locating the water-bearing utilities, roof drainage outlets and irrigation spray heads outside of the select fill and perimeter drain boundaries; and
- Raising the elevation of the ground level floor slab.

Details relative to the extent and implementation of these considerations must be evaluated on a project-specific basis by all members of the project design team. Many variables that influence fill drainage considerations may depend on factors that are not fully developed in the early stages of design. For this reason, drainage of the fill should be given consideration at the earliest possible stages of the project.

#### FOUNDATION RECOMMENDATIONS

#### SITE GRADING

Site grading plans can result in changes in almost all aspects of foundation recommendations. Based on the existing topography and a conceptual building plan provided by L/F, it is our understanding that the proposed ground floor elevation is approximately 918 ft. Cut and fill grading on the order of 2 ft will be required in order to achieve this proposed ground floor elevation. If site grading plans differ from those discussed in this report by more than plus or minus 1 ft, **R-K** must be retained to review the site grading plans prior to bidding the project for construction. This will enable **R-K** to provide input for any changes in our original recommendations that may be required as a result of site grading operations or other considerations.

#### AREA FLATWORK

It should be noted that ground-supported flatwork such as walkways, courtyards, etc. will be subject to the same magnitude of potential soil-related movements as discussed previously (see *Expansive Soil-Related Movement* section). Thus, where these types of elements abut rigid building foundations or isolated/suspended structures, differential movements should be anticipated. As a minimum, we recommend that flexible joints be provided where such elements abut the main structure to allow for differential movement at these locations. Where the potential for differential movement is objectionable, it may be beneficial to consider methods of reducing anticipated movements.

## RIGID-ENGINEERED BEAM AND SLAB FOUNDATION - BUILDING FOUNDATIONS

The proposed structures may be founded on a rigid-engineered beam and slab foundations, provided the selected foundation type can be designed to withstand the anticipated soil-related movements (see *Expansive Soil-Related Movements*) without impairing either the structural or the operational performance of the structures. We recommend that overexcavation and select fill replacement be utilized to reduce expansive soil-related movements.

## **Allowable Bearing Capacity**

Shallow foundations founded on compacted, select fill should be proportioned using the design parameters tabulated below.

Minimum depth below final grade	18 in.
Minimum beam width	12 în.
Maximum allowable bearing pressure for grade beams	2,500 psf
Maximum allowable bearing pressure for widened beams	3,000 psf

The above presented maximum allowable bearing pressures will provide a factor of safety of about 3 with respect to the measured shear strength, provided that fill is selected and placed as recommended in the *Select Fill* section of this report.

We recommend that a vapor barrier comprised of polyethylene or polyvinylchloride (PVC) sheeting be placed between the supporting soils and the concrete floor slab.

## **Modulus of Subgrade Reaction**

A modulus of subgrade reaction of 100 psi/in. may be used for concrete slabs supported on compacted structural fill, provided that fill is selected and placed as recommended in the *Select Fill* section of this report and the subgrade is prepared in accordance with the recommendations outlined in the *Site Preparation* section of this report. If an increased modulus of subgrade reaction value is needed, cement stabilization of the select fill material may be considered.

## DRILLED, STRAIGHT-SHAFT PIERS - CANOPY FOUNDATIONS

Drilled, straight-shaft piers may be considered to support the proposed canopies. Straight-shaft piers should be founded at a depth of 15 ft below existing grades, and may be designed as friction units using an allowable side shear resistance of 1.0 ksf for the portion of the shaft extending below a depth of 5 ft. The upper 5 ft of the pier shaft should be neglected for side shear resistance. Piers founded at this depth may also be designed for a maximum allowable end bearing pressure of 18 ksf. These values were calculated utilizing a minimum factor of safety of 2.

To proportion the drilled piers for axial compression, the side shear resistance should also be neglected along the portion of the shaft located one shaft diameter from the bottom of the pier.

Representatives from R-K must be present at the time of construction to verify that conditions are similar to those encountered in our borings and that sufficient penetration is achieved. For bid purposes, the owner should anticipate that shallower rock will be encountered in some areas. Consequently, contractors bidding on the job should include unit costs for various depths of additional pier embedment into rock.

Due to the presence of marly clay, marl, and limestone, high-powered, high-torque drilling equipment should be anticipated for drilled pier construction at this site (see also *Excavation Equipment*).

## **Pier Shafts**

The pier shafts will be subject to potential uplift forces if the surrounding expansive soils within the active zone are subjected to alternate drying and wetting conditions. The maximum potential uplift force acting on the shaft may be estimated by:

$$F_u = 35*D$$

where:

F<sub>u</sub> = uplift force in kips; and D = diameter of the shaft in feet.

## Allowable Uplift Resistance

Resistance to uplift forces exerted on the drilled, straight-shaft piers will be provided by the sustained compressive axial force (dead load) plus the allowable uplift resistance provided by the soil. The resistance provided by the soil depends on the shear strength of the soils adjacent to the pier shaft and below the depth of the active zone. The allowable uplift resistance provided by the soils at this site may be estimated using 1.0 ksf for the portion of the shaft extending below a depth of 5 ft. The upper 5 ft of the pier shaft should be neglected for uplift resistance. This value was evaluated using a factor of safety of 2.

Reinforcing steel will be required in each pier shaft to withstand a net force equal to the uplift force minus the sustained compressive load carried by that pier. We recommend that each pier be reinforced to withstand this net force or an amount equal to 0.5 percent of the cross-sectional area of the shaft, whichever is greater.

#### Pier Spacing

Where possible, we recommend that the piers be spaced at a center to center distance of at least three shaft diameters. Such spacing will not require a reduction in the load carrying capacity of the individual piers.

If design and/or construction restraints require that piers be spaced closer than the recommended three shaft diameters, **R-K** must re-evaluate the allowable bearing capacities presented above for the individual piers. Reductions in load carrying capacities may be required depending upon individual loading and spacing conditions.

#### Lateral Resistance

Resistance to lateral loads and the expected pier behavior under the applied loading conditions will depend not only on subsurface conditions, but also on loading conditions, the pier size, and the engineering properties of the pier. As this information is not yet available, analysis of pier behavior is not possible at this time. Once preliminary pier sizes, concrete strength, and reinforcement are known, piers should be analyzed to determine the resulting lateral deflection, maximum bending moment, and ultimate bending moment. This type of analysis is typically performed utilizing a computer analysis program and usually requires a trial and error procedure to appropriately size the piers and meet project tolerances.

To assist the design engineer in this procedure, we are providing the following soil parameters for use in analysis. These parameters are in accordance with the input requirements of one of the more commonly used computer programs for laterally loaded piles, the LPile program. If a different program is used for analysis, different parameters and limitations may be required than what were assumed in selecting the parameters given below. Thus, if a program other than LPile is used, **R-K** must be notified of the analysis method, so that we can review and revise our recommendations if required.

The soil-related parameters required for input into the LPile program are summarized in the table below:

Assumed Behavior for Analysis	Depth (ft)	c ∍ (tsf)	k, (pci)	k <sub>s</sub>	Esn	γ (ncf)
Soft Clay (Matlock)	0 to 5	0.25	100	- (POI)	0.01	110
Stiff Clay without Free Water (Reese)	5 to 15	3.00	2,000	800	0.004	125

where:

c = undrained cohesion

 $k_s = p-y \mod u \log (static)$ 

 $k_c = p-y \text{ modulus (cyclic)}$ 

 $\varepsilon_{50}$  = strain factor

 $\gamma$  = effective unit weight

The values presented above for subgrade modulus and the strain at 50% are based on recommended values for the LPile program for the strength of materials encountered in our borings and are not necessarily based on laboratory test results.

The parameters presented in the above table do <u>not</u> include factors of safety. We recommend that a factor of safety of at least 2 be introduced to the analysis by doubling the applied lateral loads and moments.

It should be noted that where piers are spaced closer than three shaft diameters center to center, a modification factor should be applied to the p-y curves to account for a group effect. We recommend the following p-Multipliers for the corresponding center to center pier spacings.

Spacing (in shaft diameters)	p-Multiplier
3	1.0
2	0.75
1	0.50

#### RETAINING STRUCTURES

The following sections provide general retaining wall information for evaluating lateral earth pressures, backfill compaction, and drainage issues for non-load bearing retaining walls, 5 ft or less in height. If taller or load bearing walls are planned, **R-K** should be retained to evaluate the necessity of a global stability analysis of the walls.

#### LATERAL EARTH PRESSURES

Equivalent fluid density values for computation of lateral soil pressures acting on retaining walls were evaluated for various types of backfill materials that may be placed behind the retaining walls. These values, as well as corresponding lateral earth pressure coefficients and estimated unit weights, are presented below in preferential order for use as backfill materials.

	Estimated	Active C	ondition	At Rest Condition		
Back Fill Type	Total Unit Weight (pcf)	Earth Pressure Coefficient, k <sub>a</sub>	Equivalent Fluid Density (pcf)	Earth Pressure Coefficient, k <sub>o</sub>	Equivalent Fluid Density (pcf)	
Washed Gravel	135	0.29	40	0.45	60	
Crushed Limestone	145	0.24	35	0.38	55	
Clean Sand	120	0.33	40	0.5	60	
Pit Run Clayey Gravels or Sands	135	0.32	45	0.48	65	
Clays	120	0.59	70	0.74	90	

The values tabulated above under "Active Conditions" pertain to flexible retaining walls free to tilt outward as a result of lateral earth pressures. For rigid, non-yielding walls the values under "At-Rest Conditions" should be used.

The values presented above assume the surface of the backfill materials to be level. Sloping the surface of the backfill materials will increase the surcharge load acting on the structures. The above values also do not include the effect of surcharge loads such as construction equipment, vehicular loads, or future storage near the structures. Nor do the values account for possible hydrostatic pressures resulting from groundwater seepage entering and ponding within the backfill materials. However, these surcharge loads and groundwater pressures should be considered in designing any structures subjected to lateral earth pressures.

The on-site clays exhibit significant shrink/swell characteristics. The use of these soils as backfill against the proposed retaining structures is not recommended. These soils generally provide higher design active earthen pressures, as indicated above, but may also exert additional active pressures associated with swelling. Controlling the moisture and density of these materials during placement will help reduce the likelihood and magnitude of future active pressures due to swelling, but this is no guarantee.

#### **BACKFILL COMPACTION**

Placement and compaction of backfill behind the retaining walls will be critical, particularly at locations where backfill will support adjacent near-grade foundations and/or flatwork. If the backfill is not properly compacted in these areas, the adjacent foundations/flatwork can be subject to settlement.

To reduce potential settlement of adjacent foundations/flatwork, the backfill materials should be placed and compacted as recommended in the Select Fill section of this report. Each lift or layer of the backfill should be tested during the backfilling operations to document the degree of compaction. Within at least a 5-ft zone of the walls, we recommend that compaction be accomplished using hand-guided compaction equipment capable of achieving the maximum density in a series of 3 to 5 passes.

#### DRAINAGE

The use of drainage systems is a positive design step toward reducing the possibility of hydrostatic pressure acting against the retaining structures. Drainage may be provided by the use of a drain trench and pipe. The drain pipe should consist of a slotted, heavy duty, corrugated polyethylene pipe and should be installed and bedded according to the manufacturer's recommendations. The drain trench should be filled with gravel (meeting the requirements of ASTM D 448 coarse concrete aggregate Size No. 57 or 67) and extend from the base of the structure to within 2 ft of the top of the structure. The bottom of the drain trench will provide an envelope of gravel around the pipe with minimum dimensions consistent with the pipe manufacturer's recommendations. The gravel should be wrapped with a suitable geotextile fabric (such as Mirafi 140N or equivalent) to help minimize the intrusion of fine-grained soil particles into the drain system. The pipe should be sloped and equipped with clean-out access fittings consistent with state-of-the-practice plumbing procedures.

As an alternative to a full-height gravel drain trench behind the proposed retaining structures, consideration may be given to utilizing a manufactured geosynthetic material for wall drainage. A number of products are available to control hydrostatic pressures acting on earth retaining structures, including Amerdrain (manufactured by American Wick Drain Corp.), Miradrain (manufactured by Mirafi, Inc.), Enkadrain (manufactured by American Enka Company), and Geotech Insulated Drainage Panel (manufactured by Geotech Systems Corp.). The geosynthetics are placed directly against the retaining structures and are hydraulically connected to the gravel envelope located at the base of the structures.

With the exception of basement or subfloor walls, weepholes may be provided along the length of the proposed retaining structures, if desired, in addition to one of the two alternative drainage measures presented above. Based on our experience, weepholes, as the only drainage measure, often become clogged with time and do not provide the required level of drainage from behind retaining structures. We recommend that **R-K** review the final retaining structure drainage design before construction.

#### FOUNDATION CONSTRUCTION CONSIDERATIONS

#### SITE DRAINAGE

Drainage is an important key to the successful performance of any foundation. Good surface drainage should be established prior to and maintained after construction to help prevent water from ponding within or adjacent to the building foundation and to facilitate rapid drainage away from the building foundation. Failure to provide positive drainage away from the structure can result in localized differential vertical movements in soil supported foundations and floor slabs.

Current ordinances, in compliance with the Americans with Disabilities Act (ADA), may dictate maximum slopes for walks and drives around and into new buildings. These slope requirements can result in drainage problems for buildings supported on expansive soils. We recommend that, on all sides of the building, the maximum permissible slope be provided away from the building.

Also to help control drainage in the vicinity of the structure, we recommend that roof/gutter downspouts and landscaping irrigation systems not be located adjacent to the building foundation. Where a select fill overbuild is provided outside of the floor slab/foundation footprint, the surface should be sealed with an impermeable layer (pavement or clay cap) to reduce infiltration of both irrigation and surface waters. Careful consideration should also be given to the location of water bearing utilities, as well as to provisions for drainage in the event of leaks in water bearing utilities. All leaks should be immediately repaired.

Other drainage and subsurface drainage issues are discussed in the *Expansive Soil-Related Movements* section of this report and under *Pavement Construction Considerations*.

#### SITE PREPARATION

Building areas and all areas to support select fill should be stripped of all vegetation and organic topsoil. Furthermore, as discussed in a previous section of this report, we recommend that overexcavation and select fill replacement be utilized to reduce expansive soil-related movements.

Exposed subgrades should be thoroughly proofrolled in order to locate and densify any weak, compressible zones. A minimum of 5 passes of a fully-loaded dump truck or a similar heavily-loaded piece of construction equipment should be used for planning purposes. Proofrolling operations should be observed by the Geotechnical Engineer or his representative to document subgrade condition and preparation. Weak or soft areas identified during proofrolling should be removed and replaced with suitable, compacted on-site clays, free of organics, oversized materials, and degradable or deleterious materials.

Upon completion of the proofrolling operations and just prior to fill placement or slab construction, the exposed subgrade should be moisture conditioned by scarifying to a minimum depth of 6 in. and recompacting to a minimum of 95 percent of the maximum density determined from TxDOT, Tex-114-E, Compaction Test. The moisture content of the subgrade should be maintained within the range of optimum moisture content to 3 percentage points above optimum moisture content until permanently covered.

#### **SELECT FILL**

Materials used as select fill for final site grading preferably should be crushed stone or gravel aggregate. We recommend that materials specified for use as select fill meet the TxDOT 2004 Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges, Item 247, Flexible Base, Types A or C Grades 1 through 3.

Soils classified as CH, CL, MH, ML, SM, GM, OH, OL and Pt under the USCS are <u>not</u> considered suitable for use as select fill materials at this site. The native soils at this site are <u>not</u> considered suitable for use as select fill materials.

Select fill should be placed in loose lifts not exceeding 8 in. in thickness and compacted to at least 95 percent of maximum density as determined by TxDOT, Tex-113-E, Compaction Test. The moisture content of the fill should be maintained within the range of 2 percentage points below to 2 percentage points above the optimum moisture content until final compaction.

#### SHALLOW FOUNDATION EXCAVATIONS

Shallow foundation excavations should be observed by the Geotechnical Engineer or his representative prior to placement of reinforcing steel and concrete. This is necessary to verify that the bearing soils at the bottom of the excavations are similar to those encountered in our borings and that excessive loose materials and water are not present in the excavations. If soft pockets of soil are encountered in the foundation excavations, they should be removed and replaced with a compacted non-expansive fill material or lean concrete up to the design foundation bearing elevations.

#### **DRILLED PIERS**

Each drilled pier excavation must be examined by an **R-K** representative who is familiar with the geotechnical aspects of the soil stratigraphy, the structural configuration, foundation design details and assumptions, prior to placing concrete. This is to observe that:

- The shaft has been excavated to the specified dimensions at the correct depth established by the previously mentioned criteria;
- The shaft has been drilled plumb within specified tolerances along its total length; and
- Excessive cuttings, buildup and soft, compressible materials have been removed from the bottom of the excavation.

Due to the presence of marly clay, marl, and limestone, high-powered, high-torque drilling equipment should be anticipated for drilled pier construction at this site (see also *Excavation Equipment*).

#### Reinforcement and Concrete Placement

Reinforcing steel should be checked for size and placement prior to concrete placement. Placement of concrete should be accomplished as soon as possible after excavation to reduce changes in the moisture content or the state of stress of the foundation materials. No foundation element should be left open overnight without concreting.

#### **Temporary Casing**

Groundwater seepage was not observed in the test borings at the time of our subsurface exploration. However, groundwater seepage and/or side sloughing is likely to be encountered at the time of construction, depending on climatic conditions prevalent at the time of construction. Therefore, we recommend that the bid documents require the foundation contractor to specify unit costs for different lengths of casing that may be required.

#### **EXCAVATION SLOPING AND BENCHING**

If utility trenches or other excavations extend to or below a depth of 5 ft below construction grade, the contractor or others shall be required to develop a trench safety plan to protect personnel entering the trench or trench vicinity. The collection of specific geotechnical data and the development of such a plan, which could include designs for sloping and benching or various types of temporary shoring, are beyond the scope of the current study. Any such designs and safety plans shall be developed in accordance with current OSHA guidelines and other applicable industry standards.

#### **EXCAVATION EQUIPMENT**

Due to the shallow nature of the surficial soils, excavations at this site may require removal of the underlying rock formation. Rock may also be encountered at the surface in some areas of this site. Thus, the need of rock excavation equipment should be anticipated for construction at this site. Our boring logs are not intended for use in determining construction means and

methods and may therefore be misleading if used for that purpose. We recommend that earthwork, utility and drilled pier contractors interested in bidding on the work perform their own tests in the form of test pits/piers to determine the quantities of the different materials to be excavated, as well as the preferred excavation methods and equipment for this site.

#### UTILITIES

Utilities which project through slab-on-grade, slab-on-fill, or any other rigid unit should be designed with either some degree of flexibility or with sleeves. Such design features will help reduce the risk of damage to the utility lines as vertical movements occur.

Our experience indicates that significant settlement of backfill can occur in utility trenches, particularly when trenches are deep, when backfill materials are placed in thick lifts with insufficient compaction, and when water can access and infiltrate the trench backfill materials. The potential for water to access the backfill is increased where water can infiltrate flexible base materials due to insufficient penetration of curbs, and at sites where geological features can influence water migration into utility trenches (such as fractures within a rock mass or at contacts between rock and clay formations). It is our belief that another factor which can significantly impact settlement is the migration of fines within the backfill into the open voids in the underlying free-draining bedding material.

To reduce the potential for settlement in utility trenches, we recommend that consideration be given to the following:

- All backfill materials should be placed and compacted in controlled lifts appropriate for the type of backfill and the type of compaction equipment being utilized and all backfilling procedures should be tested and documented.
- Curbs should completely penetrate base materials and be installed to a sufficient depth to reduce water infiltration beneath the curbs into the pavement base materials.
- Consideration should be given to wrapping free-draining bedding gravels with a
  geotextile fabric (similar to Mirafi 140N) to reduce the infiltration and loss of fines
  from backfill material into the interstitial voids in bedding materials.

#### PAVEMENT RECOMMENDATIONS

Recommendations for both flexible and rigid pavements are presented in this report. The Owner and/or design team may select either pavement type depending on the performance criteria established for the project. In general, flexible pavement systems have a lower initial construction cost as compared to rigid pavements. However, maintenance requirements over the life of the pavement are typically much greater for flexible pavements. This typically requires regularly scheduled observation and repair, as well as overlays and/or other pavement rehabilitation at approximately one-half to two-thirds of the design life. Rigid pavements are generally more "forgiving", and therefore tend to be more durable and require less maintenance after construction.

For either pavement type, drainage conditions will have a significant impact on long term performance, particularly where permeable base materials are utilized in the pavement section. Drainage considerations are discussed in more detail in a subsequent section of this report.

#### SUBGRADE CONDITIONS

We have assumed the subgrade in pavement areas will consist of recompacted on-site clays, placed and compacted as recommended in the *On-Site Clay Fill* section of this report. Based on our experience with similar subgrade soils, we have assigned a California Bearing Ratio (CBR) value of 3.0 for use in pavement thickness design analyses.

Due to the highly expansive nature of the dark brown clay, we recommend that if clay is used as the subgrade fill, that the upper 6 to 8 in. of the subgrade be lime treated to reduce the expansive soil-related heave that can occur in these soil types. However, if the dark brown clay is completely removed from the subgrade, lime treatment can be eliminated from the pavement section, and flexible base can be placed directly on the moisture conditioned tan clay subgrade. If select fill is used to achieve the subgrade elevation and if a minimum of 12 in. of select fill is placed, lime treatment can be eliminated from the pavement sections presented in a following section.

#### **DESIGN INFORMATION**

The following recommendations were prepared using the DARWin 3.1 software program which utilizes a procedure based on the 1993 "Guide for the Design of Pavement Structures" by the American Association of State Highway and Transportation Officials (AASHTO). The following recommendations were prepared assuming a 20-yr design life and Equivalent Single Axle Loads (ESAL's) of 15,000 for light duty pavements and 50,000 for heavy duty pavements. This traffic frequency is approximately equivalent to 1 and 3 tractor-trailer trucks per day for a design period of 20 years for light and heavy duty pavements, respectively. The Project Civil Engineer should review anticipated traffic loading and frequencies to verify that the assumed traffic loading and frequency is appropriate for the intended use of the facility.

#### **FLEXIBLE PAVEMENT**

Flexible pavement sections recommended for this site are as listed in the table below:

	Flexible Pavement Components					
Traffic Type		Flexible Base (in.)				
Light Duty Traffic (parking areas)	6 in. <sup>(1)</sup>	6	2			
Heavy Duty Traffic (entrances, driveways, and channelized)	6 in. <sup>(1)</sup>	9	2			

<sup>1)</sup> recommended minimum; see Subgrade Conditions section

#### **Garbage Dumpsters**

Where flexible pavements are constructed at any site, we recommend that reinforced concrete pads be provided in front of and beneath trash receptacles. The dumpster trucks should be parked on the rigid pavement when the receptacles are lifted.

It is suggested that such pads also be provided in drives where the dumpster trucks make turns with small radii to access the receptacles. The concrete pads at this site should be a minimum of 6 in, thick and reinforced with conventional steel reinforcing bars or welded wire mats.

#### RIGID PAVEMENT

We recommend that rigid pavements be considered in areas of channelized traffic, particularly in areas where truck or bus traffic is planned, and particularly where such traffic will make frequent turns, such as described above for garbage dumpster areas. We recommend that rigid pavement sections at this site consist of the following:

Traffic Type	Portland Cement Concrete
Light Duty Traffic	5 in.
Heavy Duty Traffic	6 in.

We recommend that the concrete pavements be reinforced with welded wire mats or bar mats. As a minimum, the welded wire mats should be 6 x 6 in., W4.0 x W4.0, and the bar mats should be No. 3 reinforcing bars spaced 18 in. on center in both directions. The concrete reinforcing should be placed approximately 1/3 the slab thickness below the surface of the slab, but not less than 2 in. The reinforcing should not extend across expansion joints.

Joints in concrete pavements aid in the construction and control the location and magnitude of cracks. Where practical, lay out the construction, expansion, control and sawed joints to form square panels, but not to exceed ACI 302.69 Code recommendations. The ratio of slab length-to-width should not exceed 1.25. Recommended joint spacings are 15 ft longitudinal and 15 ft transverse.

All control joints should be formed or sawed to a depth of at least 1/4 the thickness of the concrete slab. Sawing of control joints should begin as soon as the concrete will not ravel, generally the day after placement. Control joints may be hand formed or formed by using a premolded filler. We recommend that all longitudinal and transverse construction joints be dowelled to promote load transfer. Expansion joints are needed to separate the concrete slab from fixed objects such as drop inlets, light standards and buildings. Expansion joint spacings are not to exceed a maximum of 75 ft and no expansion or construction joints should be located in a swale or drainage collection locations.

If possible, the pavement should develop a minimum slope of 0.015 ft/ft to provide surface drainage. Reinforced concrete pavement should cure a minimum of 3 and 7 days before allowing automobile and truck traffic, respectively.

#### PAVEMENT CONSTRUCTION CONSIDERATIONS

#### SUBGRADE PREPARATION

Areas to support pavements should be stripped of all vegetation and organic topsoil and the exposed subgrade should be proofrolled in accordance with the recommendations in the *Site Preparation* section under *Foundation Construction Considerations*.

After completion of the proofrolling operations and just prior to flexible base placement, the exposed subgrade should be moisture conditioned by scarifying to a minimum depth of 6 in. and recompacting to a minimum of 95 percent of the maximum density determined from the Texas Department of Transportation Compaction Test (TxDOT, Tex-114-E). The moisture content of the subgrade should be maintained within the range of optimum moisture content to 3 percentage points above optimum until permanently covered.

#### DRAINAGE CONSIDERATIONS

As with any soil-supported structure, the satisfactory performance of a pavement system is contingent on the provision of adequate surface and subsurface drainage. Insufficient drainage which allows saturation of the pavement subgrade and/or the supporting granular pavement materials will greatly reduce the performance and service life of the pavement systems.

Surface and subsurface drainage considerations crucial to the performance of pavements at this site include (but are not limited to) the following:

- Any known natural or man-made subsurface seepage at the site which may occur at sufficiently shallow depths as to influence moisture contents within the subgrade should be intercepted by drainage ditches or below grade French drains.
- 2) Final site grading should eliminate isolated depressions adjacent to curbs which may allow surface water to pond and infiltrate into the underlying soils. Curbs should completely penetrate base materials and should be installed to sufficient depth to reduce infiltration of water beneath the curbs.
- 3) Pavement surfaces should be maintained to help minimize surface ponding and to provide rapid sealing of any developing cracks. These measures will help reduce infiltration of surface water downward through the pavement section.

#### **ON-SITE CLAY FILL**

As discussed previously, the pavement recommendations presented in this report were prepared assuming that on-site soils will be used for fill grading in proposed pavement areas. If used, we recommend that on-site soils be placed in loose lifts not exceeding 8 in. in thickness and compacted to at least 95 percent of the maximum density as determined by TxDOT, Tex-114-E. The moisture content of the fill should be maintained within the range of optimum water content to 3 percentage points above the optimum water content until permanently covered. We recommend that fill materials be free of roots and other organic or degradable material. We also recommend that the maximum particle size not exceed 4 in. or one half the lift thickness, whichever is smaller.

#### LIME TREATMENT OF SUBGRADE

Lime treatment of the subgrade soils, if utilized, should be in accordance with the TxDOT Standard Specifications, Item 260. A sufficient quantity of hydrated lime should be mixed with the subgrade soils to reduce the soil-lime mixture plasticity index to 15 or less. For estimating purposes, we recommend that 3 percent lime by weight be assumed for treatment. For construction purposes, we recommend that the optimum lime content of the subgrade soils be determined by laboratory testing. Lime-treated subgrade soils should be compacted to a minimum of 95 percent of the maximum density at a moisture content within the range of optimum moisture content to 3 percentage points above the optimum moisture content as determined by Tex-114-E.

If lime treatment is considered as a method to improve pavement subgrade conditions, it is also recommended to perform additional laboratory testing to determine the concentration of soluble sulfates in the subgrade soils, in order to investigate the potential for a recently reported adverse reaction to lime in certain sulfate-containing soils. The adverse reaction, referred to as sulfate-induced heave, has been known to cause cohesive subgrade soils to swell in short periods of time, resulting in pavement heaving and possible failure.

#### **FLEXIBLE BASE COURSE**

The flexible base course should be crushed limestone conforming to TxDOT Standard Specifications, Item 247, Type A, Grades 1 or 2. Base course should be placed in lifts with a maximum thickness of 8 in. and compacted to a minimum of 95 percent of the maximum density at a moisture content within the range of 2 percentage points below to 2 percentage points above the optimum moisture content as determined by Tex-113-E.

#### ASPHALTIC CONCRETE SURFACE COURSE

The asphaltic concrete surface course should conform to TxDOT Standard Specifications, Item 340, Type D. The asphaltic concrete should be compacted to a minimum of 92 percent of the maximum theoretical specific gravity (Rice) of the mixture determined according to Test Method Tex-227-F. Pavement specimens, which shall be either cores or sections of asphaltic pavement, will be tested according to Test Method Tex-207-F. The nuclear-density gauge or other methods which correlate satisfactorily with results obtained from project roadway specimens may be used when approved by the Engineer. Unless otherwise shown on the plans, the Contractor shall be responsible for obtaining the required roadway specimens at their expense and in a manner and at locations selected by the Engineer.

#### PORTLAND CEMENT CONCRETE

The Portland cement concrete should be air entrained to result in a 4 percent plus/minus 1 percent air, should have a maximum slump of 5 inches, and should have a minimum 28-day compressive strength of 3,000 psi. A liquid membrane-forming curing compound should be applied as soon as practical after broom finishing the concrete surface. The curing compound will help reduce the loss of water from the concrete. The reduction in the rapid loss in water will help reduce shrinkage cracking of the concrete.

#### CONSTRUCTION RELATED SERVICES

#### CONSTRUCTION MATERIALS TESTING AND OBSERVATION SERVICES

As presented in the attachment to this report, *Important Information About Your Geotechnical Engineering Report*, subsurface conditions can vary across a project site. The conditions described in this report are based on interpolations derived from a limited number of data points. Variations will be encountered during construction, and only the geotechnical design engineer will be able to determine if these conditions are different than those assumed for design.

Construction problems resulting from variations or anomalies in subsurface conditions are among the most prevalent on construction projects and often lead to delays, changes, cost overruns, and disputes. These variations and anomalies can best be addressed if the geotechnical engineer of record, Raba-Kistner, is retained to perform construction observation and testing services during the construction of the project. This is because:

- R-K has an intimate understanding of the geotechnical engineering report's findings and recommendations. R-K understands how the report should be interpreted and can provide such interpretations on site, on the client's behalf.
- R-K knows what subsurface conditions are anticipated at the site.
- R-K is familiar with the goals of the owner and project design professionals, having
  worked with them in the development of the geotechnical workscope. This
  enables R-K to suggest remedial measures (when needed) which help meet the
  owner's and the design teams' requirements.
- R-K has a vested interest in client satisfaction, and thus assigns qualified
  personnel whose principal concern is client satisfaction. This concern is exhibited
  by the manner in which contractors' work is tested, evaluated and reported, and in
  selection of alternative approaches when such may become necessary.
- R-K cannot be held accountable for problems which result due to misinterpretation
  of our findings or recommendations when we are not on hand to provide the
  interpretation which is required.

#### **BUDGETING FOR CONSTRUCTION TESTING**

Appropriate budgets need to be developed for the required construction testing and observation activities. At the appropriate time before construction, we advise that **R-K** and the project designers meet and jointly develop the testing budgets, as well as review the testing specifications as it pertains to this project.

Once the construction testing budget and scope of work are finalized, we encourage a preconstruction meeting with the selected contractor to review the scope of work to make sure it is consistent with the construction means and methods proposed by the contractor. **R-K** looks forward to the opportunity to provide continued support on this project, and would welcome the opportunity to meet with the Project Team to develop both a scope and budget for these services.

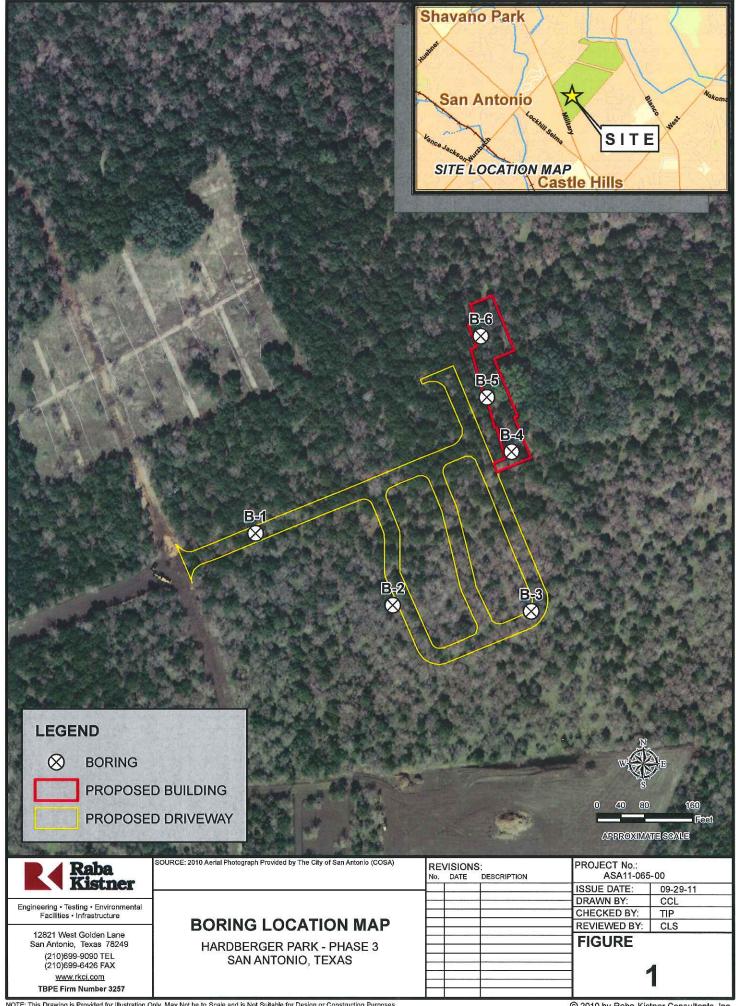
The following figures are attached and complete this report:

Figure 1 Figures 2 through 7

Figure 8 Figure 9

Boring Location Map Logs of Borings Key to Terms and Symbols Results of Soil Analyses

### **ATTACHMENTS**



Hardberger Park - Phase 3 San Antonio, Texas



DRILLING METHOD: Straight Flight Auger LOCATION: N 29.55229; W 98.53047 SHEAR STRENGTH, TONS/FT BLOWS PER FT UNIT DRY WEIGHT, pcf PLASTICITY INDEX ᇤ SAMPLES SYMBOL % -200 0.5 1.0 1.5 2.0 2.5 3.0 3.5 DEPTH, **DESCRIPTION OF MATERIAL** PLASTIC L!MIT WATER CONTENT LIQUID LIMIT SURFACE ELEVATION: 930 ft CLAY, Hard, Dark Brown, with a trace of organic matter 34 51 CLAY, Hard, Tan, with calcareous deposits NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT 50/10 5 -10--15 DEPTH DRILLED: 4.8 ft **DEPTH TO WATER:** PROJ. No.: Dry ASA11-065-00 DATE DRILLED: 9/7/2011

DATE MEASURED:

FIGURE:

9/7/2011

Hardberger Park - Phase 3 San Antonio, Texas



DRILLING METHOD: LOCATION: N 29.55196; W 98.52975 Straight Flight Auger SHEAR STRENGTH, TONS/FT **BLOWS PER FT** UNIT DRY WEIGHT, pcf PLASTICITY INDEX ㅂ SAMPLES % -200 SYMBOL 0.5 1.0 1.5 2.0 2.5 3.0 3.5 DEPTH, **DESCRIPTION OF MATERIAL** PLASTIC LIMIT WATER CONTENT LIQUID LIMIT  $\stackrel{\times}{\underset{20}{\sim}}$ SURFACE ELEVATION: 924.5 ft 40 CLAY, Stiff, Dark Brown 11 58 CLAY, Hard, Tan, with calcareous deposits NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT 50/7 - 5 -10--15-DEPTH DRILLED: 4.6 ft DEPTH TO WATER: PROJ. No.: ASA11-065-00 Dry DATE DRILLED: 9/7/2011 DATE MEASURED: 9/7/2011 FIGURE: 3

Hardberger Park - Phase 3 San Antonio, Texas



TBPE Firm Registration No. F-3257 **DRILLING** METHOD: Straight Flight Auger LOCATION: N 29.55193; W 98.52902 SHEAR STRENGTH, TONS/FT BLOWS PER FT UNIT DRY WEIGHT, pcf **--**⊗----PLASTICITY INDEX SAMPLES 3.0 SYMBOL 0.5 1.5 2.0 2.5 3.5 % -200 1.0 **DESCRIPTION OF MATERIAL** PLASTIC LIMIT WATER CONTENT LIQUID LIMIT SURFACE ELEVATION: 919 ft CLAY, Stiff, Dark Brown, with a trace of gravel 13 56 CLAY, Hard, Tan, with calcareous deposits NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT 50/10 5 -10--15 DEPTH DRILLED: **DEPTH TO WATER:** 4.8 ft Dry PROJ. No.: ASA11-065-00 DATE DRILLED: 9/7/2011 DATE MEASURED: 9/7/2011

FIGURE:

Hardberger Park - Phase 3 San Antonio, Texas



TBPE Firm Registration No. F-3257 **DRILLING** METHOD: LOCATION: N 29.55266; W 98.52912 Straight Flight Auger SHEAR STRENGTH, TONS/FT BLOWS PER FT UNIT DRY WEIGHT, pcf PLASTICITY INDEX F SAMPLES 1,0 % -200 SYMBOL 0.5 2.0 2.5 3.0 3.5 1.5 **DESCRIPTION OF MATERIAL** PLASTIC LIMIT WATER CONTENT LIQUID LIMIT SURFACE ELEVATION: 918 ft CLAY, Dark Brown CLAY, Very Stiff to Hard, Tan, with calcareous 16 deposits 29 NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT 38 50/6" -marly below 5 ft (weathered limestone?) 50/6" 50/8" 26 LIMESTONE, Hard, Tan ref/1" MARL, Hard, Tan -15 DEPTH DRILLED: 18.6 ft **DEPTH TO WATER:** PROJ. No.: Dry ASA11-065-00

DATE MEASURED:

9/7/2011

FIGURE:

DATE DRILLED:

9/7/2011

Hardberger Park - Phase 3



TBPE Firm Registration No. F-3257 San Antonio, Texas DRILLING METHOD: LOCATION: N 29.55291; W 98.52925 Straight Flight Auger SHEAR STRENGTH, TONS/FT BLOWS PER FT UNIT DRY WEIGHT, pcf PLASTICITY INDEX Ē SAMPLES % -200 0.5 1.5 2.0 2.5 3.0 SYMBOL 1.0 3,5 **DESCRIPTION OF MATERIAL** PLASTIC LIMIT WATER CONTENT LIQUID LIMIT SURFACE ELEVATION: 919 ft 40 CLAY, Dark Brown CLAY, Marly, Very Stiff to Hard, Tan 26 NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT 20 50 50/10 50/6" 28 -marly below 9 ft (weathered limestone?) 50/6" LIMESTONE, Hard, Tan CLAY, Hard, Tan ref/1". DEPTH DRILLED: 18.6 ft **DEPTH TO WATER:** PROJ. No.: ASA11-065-00

DATE MEASURED:

9/7/2011

FIGURE:

6

DATE DRILLED:

9/7/2011

Hardberger Park - Phase 3 San Antonio, Texas



**DRILLING** METHOD: Straight Flight Auger LOCATION: N 29.55319; W 98.52928 SHEAR STRENGTH, TONS/FT BLOWS PER FT -⊗-UNIT DRY WEIGHT, pcf PLASTICITY INDEX ᇤ SAMPLES SYMBOL 0.5 2.0 2.5 3.5 % -200 1.0 1.5 3.0 4.0 **DESCRIPTION OF MATERIAL** PLASTIC LIMIT WATER CONTENT LIQUID LIMIT SURFACE ELEVATION: 918 ft CLAY, Dark Brown CLAY, Very Stiff to Hard, Tan, with ferric 23 staining and ferrous deposits 12 NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT 46 50/8 50/6" -marly below 7 ft (weathered limestone?) ref/6" ref/6" 22 ref/6' **DEPTH TO WATER:** PROJ. No.: DEPTH DRILLED: 19.5 ft ASA11-065-00 Dry DATE DRILLED: DATE MEASURED: 9/7/2011 9/7/2011 FIGURE: 7

#### **KEY TO TERMS AND SYMBOLS**

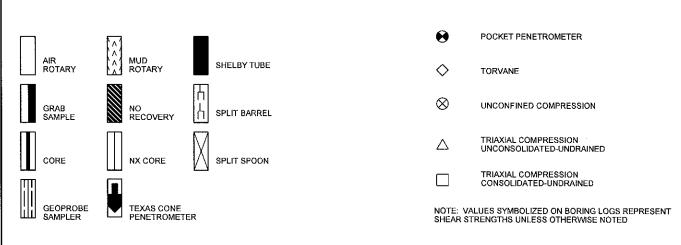
#### MATERIAL TYPES

#### SOIL TERMS **ROCK TERMS OTHER** CALCAREOUS PEAT LIMESTONE ASPHALT CALICHE SAND CLAYSTONE MARL BASE CLAY-SHALE METAMORPHIC CONCRETE/CEMENT CONGLOMERATE SANDSTONE BRICKS / PAVERS DOLOMITE SHALE WASTE SILTSTONE NO INFORMATION GRAVELLY **IGNEOUS**

#### WELL CONSTRUCTION AND PLUGGING MATERIALS



#### SAMPLE TYPES



PROJECT NO. ASA11-065-00

STRENGTH TEST TYPES

#### **KEY TO TERMS AND SYMBOLS (CONT'D)**

#### **TERMINOLOGY**

Terms used in this report to describe soils with regard to their consistency or conditions are in general accordance with the discussion presented in Article 45 of SOILS MECHANICS IN ENGINEERING PRACTICE, Terzaghi and Peck, John Wiley & Sons, Inc., 1967, using the most reliable information available from the field and laboratory investigations. Terms used for describing soils according to their texture or grain size distribution are in accordance with the UNIFIED SOIL CLASSIFICATION SYSTEM, as described in American Society for Testing and Materials D2487-06 and D2488-00, Volume 04.08, Soil and Rock; Dimension Stone; Geosynthetics; 2005.

The depths shown on the boring logs are not exact, and have been estimated to the nearest half-foot. Depth measurements may be presented in a manner that implies greater precision in depth measurement, i.e 6.71 meters. The reader should understand and interpret this information only within the stated half-foot tolerance on depth measurements.

RELATIVE DI	ENSITY
-------------	--------

#### COHESIVE STRENGTH

#### **PLASTICITY**

Penetration Resistance Blows per ft	Relative <u>Density</u>	Resistance Blows per ft	Consistency	Cohesion TSF	Plasticity <u>Index</u>	Degree of Plasticity
0 - 4	Very Loose	0 - 2	Very Soft	0 - 0.125	0 - 5	None
4 - 10	Loose	2 - 4	Soft	0.125 - 0.25	5 - 10	Low
10 - 30	Medium Dense	4 - 8	Firm	0.25 - 0.5	10 - 20	Moderate
30 - 50	Dense	8 - 15	Stiff	0.5 - 1.0	20 - 40	Plastic
> 50	Very Dense	15 - 30	Very Stiff	1.0 - 2.0	> 40	Highly Plastic
		> 30	Hard	> 2.0		

#### **ABBREVIATIONS**

B = Benzene	Qam, Qas, Qal = Quaternary Alluvium	Kef = Eagle Ford Shale
T = Toluene	Qat = Low Terrace Deposits	Kbu = Buda Limestone
E = Ethylbenzene	Qbc = Beaumont Formation	Kdr = Del Rio Clay
X = Total Xylenes	Qt = Fluviatile Terrace Deposits	Kft = Fort Terrett Member
BTEX = Total BTEX	Qao = Seymour Formation	Kgt = Georgetown Formation
TPH = Total Petroleum Hydrocarbons	s Qle = Leona Formation	Kep = Person Formation
ND = Not Detected	Q-Tu = Uvalde Gravel	Kek = Kainer Formation
NA = Not Analyzed	Ewi = Wilcox Formation	Kes = Escondido Formation
NR = Not Recorded/No Recovery	Emi = Midway Group	Kew = Walnut Formation
OVA = Organic Vapor Analyzer	Mc = Catahoula Formation	Kgr = Glen Rose Formation
ppm = Parts Per Million	El = Laredo Formation	Kgru = Upper Glen Rose Formation
	Kknm = Navarro Group and Marlbrook Marl	Kgrl = Lower Glen Rose Formation
		Kh = Hensell Sand
	Kpg = Pecan Gap Chalk	
	Kau = Austin Chalk	

PROJECT NO. ASA11-065-00

#### **KEY TO TERMS AND SYMBOLS (CONT'D)**

#### TERMINOLOGY

#### SOIL STRUCTURE

Slickensided

Having planes of weakness that appear slick and glossy.

Fissured

Containing shrinkage or relief cracks, often filled with fine sand or silt; usually more or less vertical.

Pocket

Inclusion of material of different texture that is smaller than the diameter of the sample.

Parting Seam

Inclusion less than 1/8 inch thick extending through the sample. Inclusion 1/8 inch to 3 inches thick extending through the sample. Inclusion greater than 3 inches thick extending through the sample.

Layer

Soil sample composed of alternating partings or seams of different soil type.

Laminated Interlayered

Soil sample composed of alternating layers of different soil type.

Intermixed

Soil sample composed of pockets of different soil type and layered or laminated structure is not evident.

Calcareous

Having appreciable quantities of carbonate.

Carbonate

Having more than 50% carbonate content.

#### SAMPLING METHODS

#### RELATIVELY UNDISTURBED SAMPLING

Cohesive soil samples are to be collected using three-inch thin-walled tubes in general accordance with the Standard Practice for Thin-Walled Tube Sampling of Soils (ASTM D1587) and granular soil samples are to be collected using two-inch split-barrel samplers in general accordance with the Standard Method for Penetration Test and Split-Barrel Sampling of Soils (ASTM D1586). Cohesive soil samples may be extruded on-site when appropriate handling and storage techniques maintain sample integrity and moisture content.

#### STANDARD PENETRATION TEST (SPT)

A 2-in.-OD, 1-3/8-ID split spoon sampler is driven 1.5 ft into undisturbed soil with a 140-pound hammer free falling 30 in. After the sampler is seated 6 in. into undisturbed soil, the number of blows required to drive the sampler the last 12 in. is the Standard Penetration Resistance or "N" value, which is recorded as blows per foot as described below.

#### SPLIT-BARRELL SAMPLER DRIVING RECORD

Blows Per Foot	Description
50/7"	or blowe drove damper / monde, and militar o monde or seating.

NOTE: To avoid damage to sampling tools, driving is limited to 50 blows during or after seating interval.

PROJECT NO. ASA11-065-00

#### **RESULTS OF SOIL SAMPLE ANALYSES**

PROJECT NAME:

Hardberger Park - Phase 3 San Antonio, Texas

FILE NAME: ASA11-065-00.GPJ

9/29/2011

Boring No.	Sample Depth (ft)	Blows per ft	Water Content (%)	Liquid Limit	Plastic Limit	Plasticity Index	uscs	Dry Unit Weight (pcf)	% -200 Sieve	Shear Strength (tsf)	Strengt Test
B-1	0.0 to 1.5	34	17	79	28	51	СН				
	3.5 to 4.8	50/10"	8								
B-2	0.0 to 1.5	11									
	0.0 to 1.5		15	87	29	58	СН				
	3.5 to 4.6	50/7"	4								
B-3	0.0 to 1.5	13	13	89	33	56	СН				
	3.5 to 4.8	50/10"	6								
B-4	0.0 to 1.5	16									
	0.5 to 1.5		11	52	23	29	СН				
	2.5 to 4.0	38	6								
	4.5 to 5.5	50/6"	7								
	6.5 to 7.5	50/6"	10								
	8.5 to 9.7	50/8"	9	41	15	26	CL				
	13.5 to 13.6	ref/1"									
	13.6 to 14.5		5								
	17.5 to 18.5		7								
	18.5 to 18.6	ref/1"									
B-5	0.0 to 1.5	26	7								
	2.5 to 4.0	44	5	43	23	20	CL				
	4.5 to 6.0	50	6								
	6.5 to 7.8	50/10"	10								
	8.5 to 9.5	50/6"	9	43	15	28	CL				
	13.5 to 14.5	50/6"	13								
	17.5 to 18.5		8								
	18.5 to 18.6	ref/1"							····		
B-6	0.0 to 1.5	23									
	0.5 to 1.5		6	41	29	12	ML				
	2.5 to 4.0	46	6								
	4.5 to 5.7	50/8"	6								
	6.5 to 7.5	50/6"	6								
	8.5 to 9.0	ref/6"	7								
	13.5 to 14.0	ref/6"	12	37	15	22	CL				
	18.5 to 19.0	ref/6"	13								

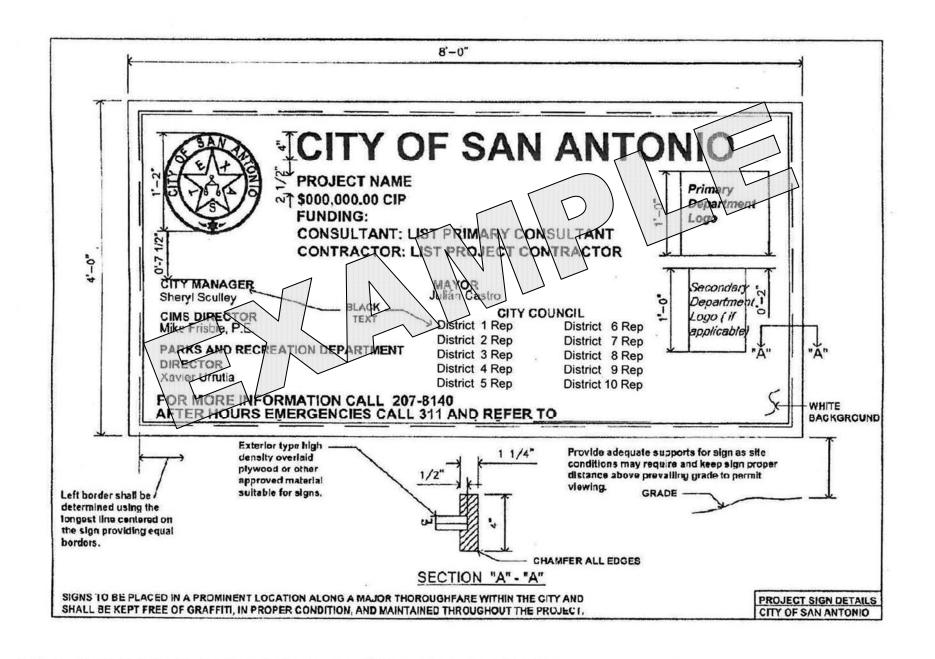
PP = Pocket Penetrometer

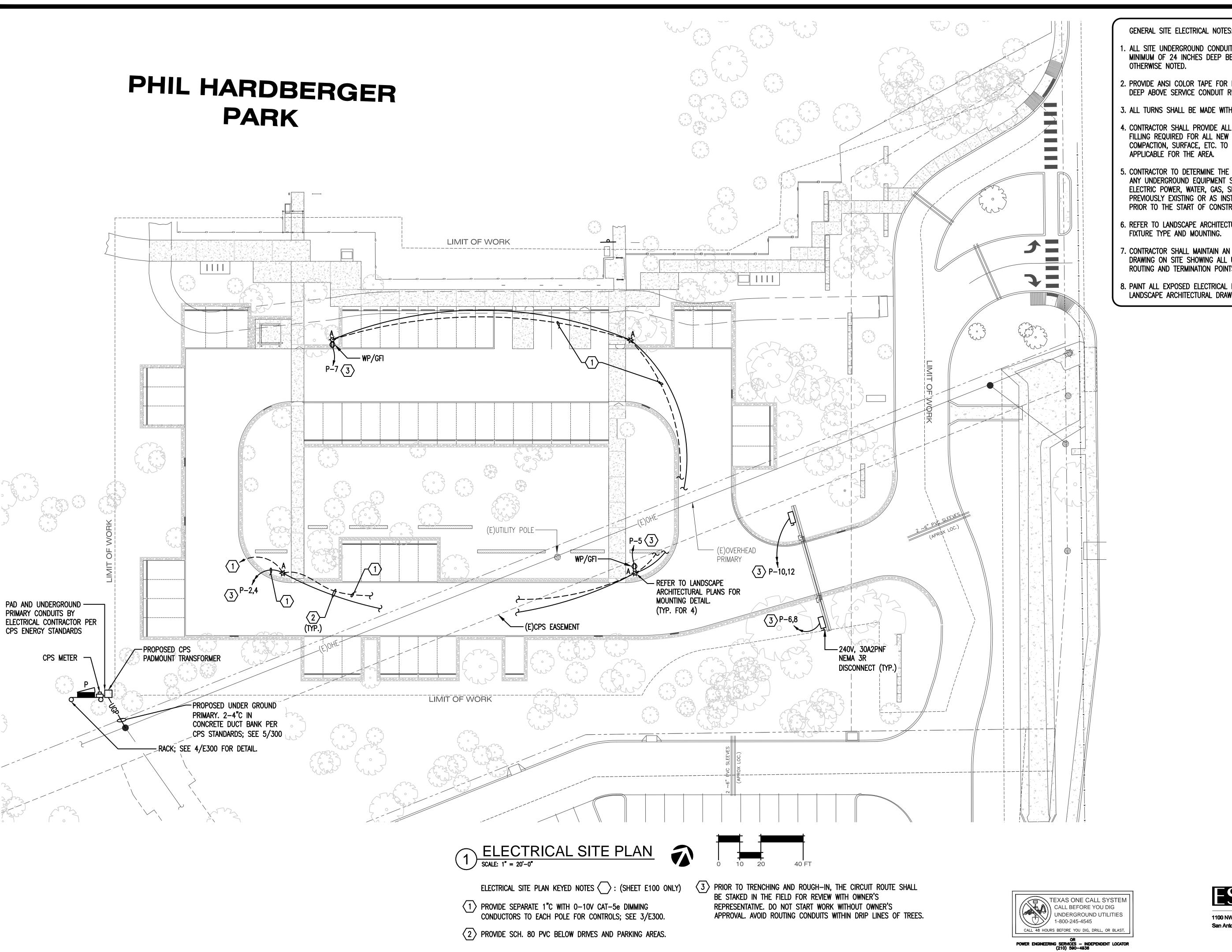
TV = Torvane

UC = Unconfined Compression FV = Field Vane UU = Unconsolidated Undrained Triaxial

CU = Consolidated Undrained Triaxial

PROJECT NO. ASA11-065-00





GENERAL SITE ELECTRICAL NOTES: (ALL ELECTRICAL SHEETS)

- . ALL SITE UNDERGROUND CONDUIT SHALL BE BURIED A MINIMUM OF 24 INCHES DEEP BELOW FINISHED GRADE UNLESS
- 2. PROVIDE ANSI COLOR TAPE FOR IDENTIFICATION AT 18 INCHES DEEP ABOVE SERVICE CONDUIT RUNS.
- 3. ALL TURNS SHALL BE MADE WITH LONG SWEEP ELLS.
- 4. CONTRACTOR SHALL PROVIDE ALL EXCAVATING AND BACK FILLING REQUIRED FOR ALL NEW WORK INCLUDING FILL, COMPACTION, SURFACE, ETC. TO MEET ALL REQUIREMENTS AS APPLICABLE FOR THE AREA.
- 5. CONTRACTOR TO DETERMINE THE PRESENCE AND LOCATION OF ANY UNDERGROUND EQUIPMENT SUCH AS TELEPHONE, ELECTRIC POWER, WATER, GAS, SEWAGE LINES, ETC. WHETHER PREVIOUSLY EXISTING OR AS INSTALLED BY OTHER TRADES, PRIOR TO THE START OF CONSTRUCTION.
- 6. REFER TO LANDSCAPE ARCHITECTURAL PLANS FOR LIGHT
- 7. CONTRACTOR SHALL MAINTAIN AN AS-BUILT DIMENSIONAL DRAWING ON SITE SHOWING ALL UNDERGROUND CONDUIT ROUTING AND TERMINATION POINTS.
- 8. PAINT ALL EXPOSED ELECTRICAL BOXES AND CONDUIT PER LANDSCAPE ARCHITECTURAL DRAWINGS.



**RIALTO** STUDIO

HARDBERGER P. SAN ANTONIO, TEXA

ESA Mechanical & Electrical Engineering, Inc.

San Antonio, Texas 78213 F 210.342.3641 TBPE FIRM REGISTRATION NO. F-4137 JOB NO.: 15009

CHECKED<u>SALM</u> DRAWN<u>EG</u>

GENERAL ELECTRICAL NOTES: (ALL ELECTRICAL SHEETS)

- 1. ALL WORK SHALL CONFORM TO THE LATEST ADOPTED VERSIONS OF THE NATIONAL ELECTRICAL CODE (NEC) INCLUDING LOCAL AMENDMENTS, NATIONAL FIRE CODES (PUBLISHED BY THE NFPA), INTERNATIONAL ENERGY CODE (IECC), STATE AND LOCAL BUILDING CODES, AMERICANS WITH DISABILITIES ACT (ADA), LOCAL ACCESSIBILITY STANDARDS, AND STANDARD WORKMANSHIP PRACTICES.
- 2. CONTRACTOR SHALL VISIT THE SITE AND SHALL BECOME FAMILIAR WITH THE EXISTING SITE CONDITIONS AND PROJECT SCOPE PRIOR TO SUBMITTING BID.
- 3. PROCURE ALL THE NECESSARY AND USUAL PERMITS AND CERTIFICATES FOR ALL WORK INSTALLED. DELIVER SAME TO THE OWNER BEFORE FINAL ACCEPTANCE. PAY ALL INSPECTION FEES NECESSARY.
- 4. THE DRAWINGS ARE DIAGRAMMATIC IN NATURE AND DO NOT SHOW EVERY MINOR DETAIL. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL ITEMS REQUIRED FOR A COMPLETE ELECTRICAL SYSTEM.
- 5. ELECTRICAL CONTRACTOR SHALL INCLUDE TEMPORARY POWER, WIRING AND LIGHTING AS PART OF HIS SCOPE AS REQUIRED.
- 6. ELECTRICAL GEAR SUCH AS PANELBOARDS, DISCONNECTS, ETC. SHALL BE LABELED BY NAME OR BY EQUIPMENT SERVED WITH PERMANENTLY ATTACHED LABELS. PANELBOARDS SHALL HAVE A TYPED CIRCUIT DIRECTORY CARD PROTECTED BY A PLASTIC SLEEVE.
- 7. PANELBOARDS MADE PART OF THIS PROJECT SHALL BE FIELD MARKED TO WARN QUALIFIED PERSONS OF POTENTIAL ARC FLASH HAZARD IN ACCORDANCE WITH NEC 110.16.
- 8. PARTS AND ELECTRIC EQUIPMENT THAT ARC OR SPARK IN NORMAL OPERATION SHALL BE ENCLOSED IN ACCORDANCE WITH NEC 110.18.
- 9. PROVIDE GROUND FAULT CIRCUIT INTERRUPTION (GFI) MEANS FOR RECEPTACLES LOCATED IN DAMP OR WET LOCATIONS AND ANY OTHER LOCATION REQUIRED BY CODE. GENERAL PURPOSE RECEPTACLES DOWNSTREAM OF A GFI TYPE RECEPTACLE ON THE SAME BRANCH CIRCUIT SHALL BE CONSIDERED GFI PROTECTED AND SHALL BE LABELED AS SUCH.

- 10. MINIMUM WIRE SIZE FOR LIGHTING AND RECEPTACLE BRANCH CIRCUITS SHALL BE #12 AWG. ALL CONDUCTORS SHALL BE COPPER THWN/THHN AND INSTALLED IN APPROVED RACEWAY. ALUMINUM OR COPPER—CLAD WIRING SHALL NOT BE USED. MINIMUM CONDUIT SIZE SHALL BE 1/2". MINIMUM UNDERGROUND CIRCUIT SIZE SHALL BE 3/4".
- 11. ALL MATERIALS SHALL BE NEW AND OF DOMESTIC ORIGIN AND SHALL BEAR UNDERWRITERS' LABEL WHERE APPLICABLE.
- 12. ALL WORK SHALL BE PERFORMED BY A LICENSED ELECTRICAL CONTRACTOR IN A FIRST—CLASS WORKMANLIKE MANNER. THE COMPLETED SYSTEM IS TO BE FULLY OPERABLE AND ACCEPTANCE OF THIS SYSTEM BY THE ENGINEER/ARCHITECT MUST BE A CONDITION OF THE SUB CONTRACT.
- 13. CONTRACTOR TO GUARANTEE ALL MATERIALS AND WORKMANSHIP FREE FROM DEFECTS FOR A PERIOD OF NOT LESS THAN ONE (1) YEAR FROM DATE OF ACCEPTANCE.
- 14. CONTRACTOR TO PAY FOR ALL PERMITS, FEES, INSPECTIONS AND TESTING.
- 15. ALL UNDERGROUND RACEWAYS SHALL BE GALVANIZED RIGID STEEL CONDUIT OR SCHEDULE 40 PVC (SCH. 80 BELOW DRIVES AND PARKING AREAS). ALL OTHER RACEWAYS TO COMPLY WITH GOVERNING CODES. MINIMUM CONDUIT UNDERGROUND SHALL BE 3/4" CONDUIT U.O.N.
- 16. OUTLET BOXES SHALL BE PRESSED STEEL IN DRY LOCATIONS, CAST ALLOY WITH THREADED HUBS IN WET OR DAMP LOCATIONS, AND BE OF SPECIAL CONSTRUCTION FOR OTHER CLASSIFIED AREAS. ALL BOXES SHALL BE RECESSED (FLUSH) IN WALLS OR CEILINGS WHENEVER POSSIBLE.
- 17. ALL RACEWAYS AND PIPES, SPACED IN OR THROUGH ANY CONCRETE SLAB, SHALL BE SPACED A MINIMUM OF THREE TIMES THE DIAMETER OF THE LARGEST RACEWAY.
- 18. ALL ELECTRICAL RACEWAYS (METALLIC AND NONMETALLIC) SHALL HAVE AN EQUIPMENT GROUND CONDUCTOR SIZED IN ACCORDANCE WITH THE LATEST EDITION OF THE NEC. OR AS SHOWN ON DRAWINGS, WHICHEVER IS MORE STRINGENT.

- 19. ALL SWITCHGEAR SHALL BE THE PRODUCT OF A SINGLE MANUFACTURER. TANDEM AND HALF—SPACE CIRCUIT BREAKERS SHALL NOT BE USED.
- 20. ALL UNDERGROUND PVC CONDUIT RUNS SHALL HAVE RIGID STEEL ELBOWS AND RIGID STEEL SECTIONS AT SLAB PENETRATIONS. WHERE RIGID STEEL IS USED, IT SHALL BE COMPLETELY COATED WITH AN ALKALI AND RUST—RESISTANT BITUMASTIC PAINT, AND THREADS SHALL BE COATED WITH ZINC CHROMATE.
- 21. THE ELECTRICAL CONTRACTOR SHALL MEET AND COORDINATE WITH THE LOCAL UTILITY COMPANIES AT THE SITE PRIOR TO CONSTRUCTION. AT THAT TIME, THE CONTRACTOR SHALL COORDINATE ALL RELATED WORK WITH THE UTILITY COMPANIES' REPRESENTATIVES TO MEET THE OWNER'S SCHEDULE.
- 22. IT IS THE CONTRACTOR'S RESPONSIBILITY TO REVIEW ALL DRAWINGS AND SPECIFICATIONS, INCLUDING BUT NOT LIMITED TO, CIVIL, ELECTRICAL AND MECHANICAL PRIOR TO SUBMITTING A BID. REPORT ANY DISCREPANCIES TO OWNER OR ENGINEER PRIOR TO BID.
- 23. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY THE OWNER OF ANY DISCREPANCIES ENCOUNTERED ON THE PLANS OR IN EXISTING SITE CONDITIONS PRIOR TO SUBMISSION OF BID.

CKT	CIRCUIT				
AFF	ABOVE FINISHED FLOOR				
UGE	UNDERGROUND ELECTRICAL				
UGP	UNDERGROUND PRIMARY				
WP	WEATHERPROOF				
OHE	OVERHEAD ELECTRICAL				
N.I.C.	NOT IN CONTRACT				
	LIGHTING				
<b></b>	FLUORESCENT STRIP FIXTURE				
9	WALL BRACKET FIXTURE				
ф	LIGHT FIXTURE				
$\nabla$	FLOOD LIGHT FIXTURE				
Δ	SURFACE LIGHT				
	STEP LIGHT				
0	UPLIGHT FIXTURE				
$\otimes$	FLASHING BEACON/STROBE LIGHT				
<b>&amp;</b>	EXIT SIGN				
<b>A</b>	EXIT SIGN W/ HEADS				
×	STARTER OR CONTACTOR				
PC	PHOTO CELL				
	POWER				
Φ	SIMPLEX RECEPTACLE				
Ф	DUPLEX CONVENIENCE OUTLET				
₩	208V 1ø RECEPTACLE				
#	QUADPLEX CONVENIENCE OUTLET				
Φ <sup>GFI</sup>	OUTLET WITH GROUND FAULT CIRCUIT INTERRUPTER				
(J), (J	JUNCTION BOX				
PB	PULL BOX				
W	INDIVIDUAL METER				

ELECTRICAL LEGEND

**GENERAL** 

DENOTES ELECTRICAL KEYED NOTE

LOW-VOLTAGE CIRCUIT

POINT OF CONNECTION

DENOTES EXISTING

DESCRIPTION

CIRCUIT HOME—RUN TO PANEL (LINE—VOLTAGE)

MARK

POC

NOTE: NOT ALL MARKS MAY BE USED. DASHED ITEMS INDICATE

PANEL

MOTOR

TIME CLOCK

TRANSFORMER

GROUND

0

TC

DISCONNECT SWITCH

MOTOR RATED SWITCH

LIGHT FIXTURE SCHEDULE										
MARK	FIXTURE DESCRIPTION	LIGHT SOURCE	LAMP MODEL	NO. LAMPS	WATTS	VOLTS	MOUNTING	MANUFACTURER	MODEL	NOTES
A	POLE LIGHT	LED LM79 & LM80 TESTED	12,557Lm, 250kHr	-	120	240	W/ POLE	EMBER LED	VS-L80-525-XPG-65-D2-PG-V1-PREMIUM CHIP SET 13' LONG 4.5" OD ROUND STRAIGHT HOT DIPPED GALVANIZED STEEL POLE	1, 2, 3

### LIGHT FIXTURE SCHEDULE NOTES:

- 1. FIXTURE SHALL MATCH EXISTING PARK POLE LIGHT STANDARD, NO EXCEPTION.
- 2. PROVIDE 0-10V DIMMING DRIVER.
- 3. CONTACT MR. STEVE TRISTAN AT RKI LIGHTING (210-349-2131)

PANEL		Р		COMMENTS:															
_OCAT	ION:		Exterio	r; see	E100														
120/ 240			VOLTS, 1 PHASE, 3 WIRE		SE, 3 WIRE	60 AMP MAIN BREAKER				10 KAIC									
CIRCUIT DATA			CKT NR	LOAD	CB POLE	CB TRIP	CB LOAD	PHASE A	PHASE B	CB LOAD	CB TRIP	CB POLE	LOAD	CKT NR	CIRC	CUIT DA	ΓΑ		
NR	WIRE	GND	С			NR	Α	VA			VA	А	NR			NR	WIRE	GND	С
2	12	12	1/2"	1	CONV. RECEPT.	1	20	180	694		514	20	1	PARKING AREA LIGHTS	2	2	10	10	3/4"
2	12	12	1/2"	3	LIGHTING CONTROL PANEL	1	20	200		714	514				4	Ш			
2	10	10	3/4"	5	POLE MOUNTED RECEPT.	1	20	180	780		600	20	2	GATE	6	2	10	10	3/4"
2	10	10	3/4"	7	POLE MOUNTED RECEPT.	1	20	180		780	600		2		8	+			- / . 7
_				9	SPARE	1	20		600		600	20	2	GATE	10	2	10	10	3/4"
_				11	SPARE	1	20		^	600	600		-	DUCCED CDACE	12	+-			
+				13	SPARE BUSSED SPACE		20		0	0	-		-	BUSSED SPACE BUSSED SPACE	14 16	+			
-				15 17	BUSSED SPACE				0	0	_		_	BUSSED SPACE	18	+			
$\overline{}$				19	BUSSED SPACE				U	0	<del>                                     </del>		<del>                                     </del>	BUSSED SPACE	20	$\vdash$			
				13	BOSSED SI NOE					U				DOSSED STAGE	20				
						PHASE C	ONN.		2074	2094	VA			% SPARE CAPACITY	1				
				TOTAL CONNECTED LOAD			4	KVA	95 % DEMAND FACTOR										
				CONNECT	CONNECTED + SPARE LOAD			4	KVA		17 AMPS CONNECTED								
					SEE RISER	TOTAL D	EMAND			4	KVA			•	-				
						TOTAL D	FMAND	AMPS		16	<b>1</b> AT	240	VOLTS						

		LOAD ANAL					
		HARDBERG	ER PARK				
	AREA (SF):	N/A		VOLTS:	240	SINGLE PHASE	
OAD DESCRIPTION					CONNECTED KVA	DIVERSITY	DEMAND KVA
IGHTING:					1	1.25	1
RECEPTACLES:					1	1.0/0.5	1
ATES:					2	1.00	2
TAL KVA:							5
OTAL AMPS:							19
ERVICE ENTRANCE SIZE, AMPS	ç.						60

ESA Mechanical & Electrical Engineering, Inc.

1100 NW Loop 410, Suite 810 210.342.3483
San Antonio, Texas 78213 F 210.342.3641

TBPE FIRM REGISTRATION NO. F-4137

JOB NO.: 15009

PLAT NO.

JOB NO.

1375

DATE

JUNE 2015

DESIGNER

CHECKED SALM DRAWN EG

SHEET

E200

NO. REVISION DATE



**FRS** 13 | PHONE: 210.375.9000 FAX: 210.375.9010

TIL ENGINEERS

OOP 410 | SAN ANTONIO, TEXAS 78213 | PHG

RIALTO STUDIO

HARDBERGER PARK

SAN ANTONIO, TEXAS

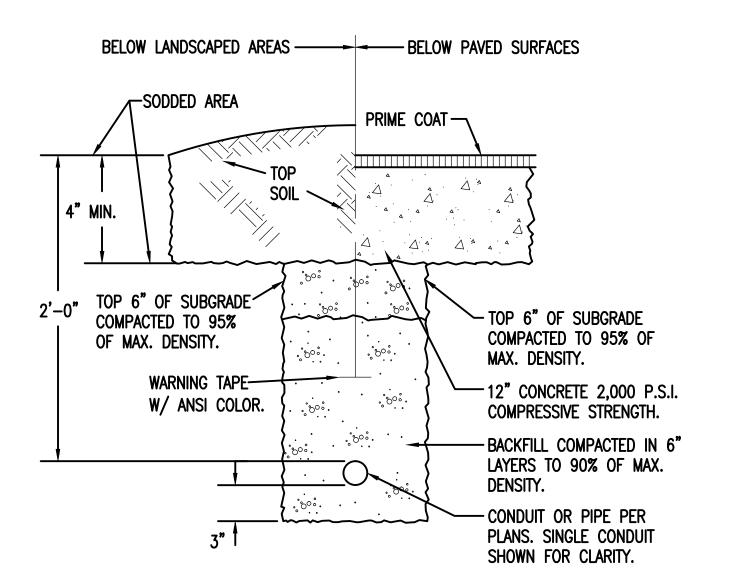
HARDBERGER PARK PHASE IV PARKING

Electrical Legend, Notes and Schedules

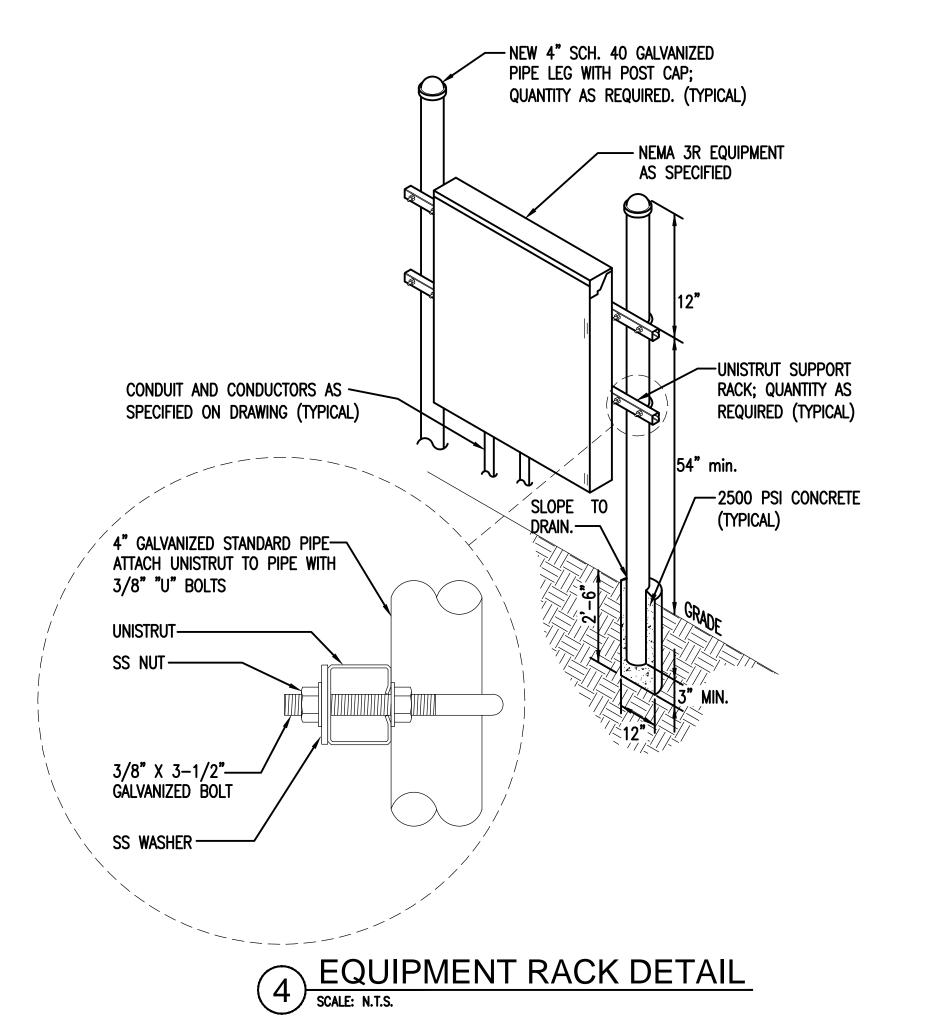


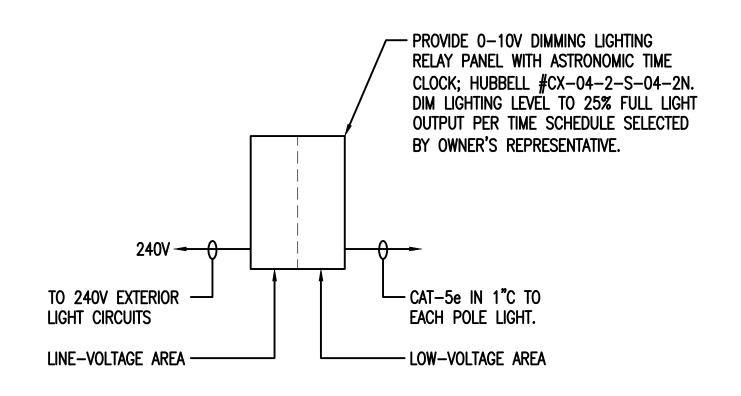
### GENERAL RISER DIAGRAM NOTES:

- MAIN SERVICE ENTRANCE GEAR SHALL BE LISTED AND LABELED AS SUCH.
- GROUND RODS SHALL BE 5/8" X 10' MINIMUM. TEST SOIL FOR LESS THAN 25-OHM RESISTANCE AND ADD ADDITIONAL GROUND RODS AS REQUIRED. AT A MINIMUM, THE SERVICE GROUND SHALL BE BONDED TO BUILDING STRUCTURAL STEEL, DOMESTIC METAL COLD WATER PIE AND CONCRETE ENCASED REBAR (UFER) LOCATED WITHIN FOOTING OR BEAM OF POURED SLAB IN DIRECT CONTACT WITH EARTH, MINIMUM 20' OF 1/2" REBAR OR #4 AWG.
- CONNECTIONS TO GROUND RODS BELOW GRADE SHALL BE EXOTHERMIC WELD
- COORDINATE EXACT INSTRUMENT TRANSFORMER AND METER LOCATION AND DETERMINE THE CUSTOMER'S SIDE OF THE POINT OF SERVICE DELIVERY ON SITE WITH THE LOCAL UTILITY REPRESENTATIVE.

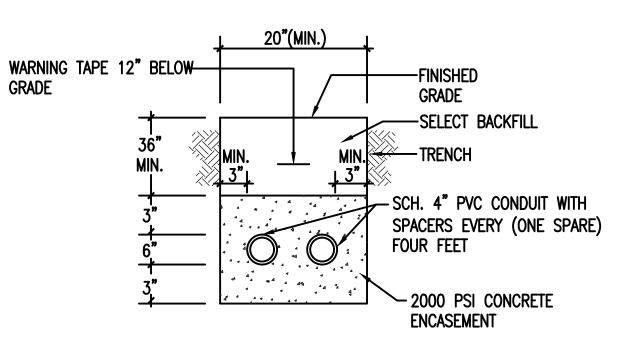


# 2 SECTION THROUGH TRENCH SCALE: N.T.S.

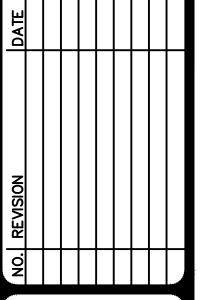




3 LIGHTING CONTROL SCHEMATIC SCALE: N.T.S.



- PRIMARY DISTRIBUTION DUCT BANK DETAIL SCALE: N.T.S.
  - 1. ALL ELBOWS TO BE SCH. 80 AND SHALL BE TOTALLY ENCASED IN CONCRETE.





PAPE-DAWSON ENGINEERS

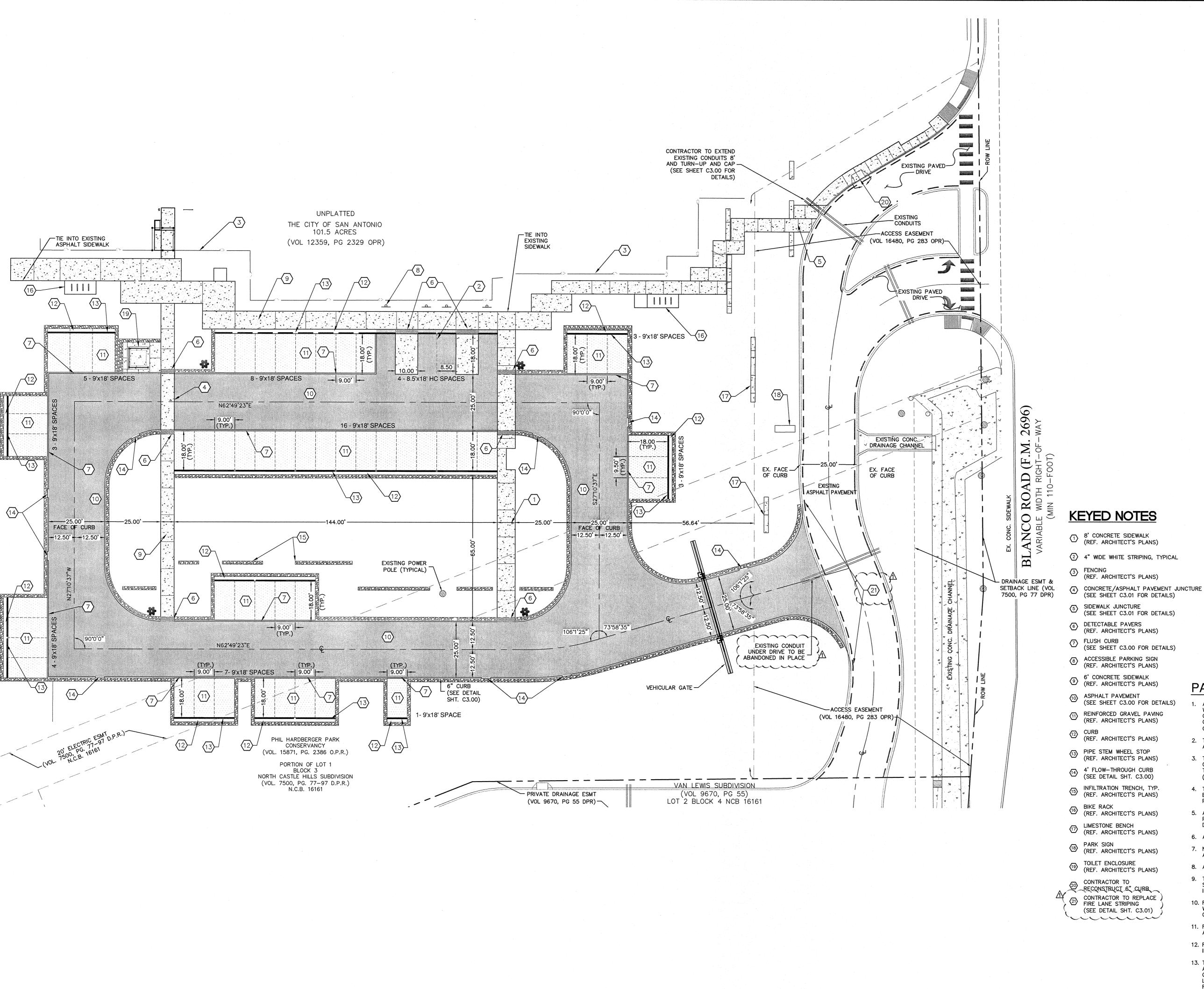
**RIALTO** STUDIO

HARDBERGER PARK SAN ANTONIO, TEXAS HARDBERGER PARK PHASE IV Electrical Riser and Details

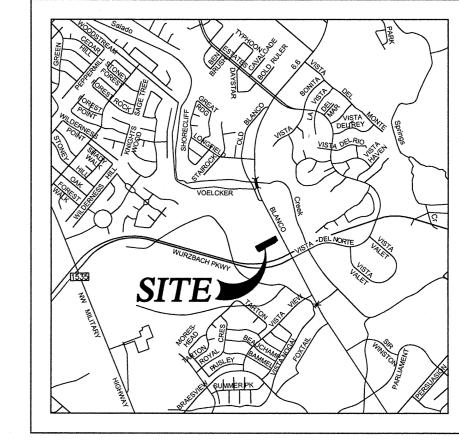
1375

DATE JUNE 2015 DESIGNER 1100 NW Loop 410, Suite 810 San Antonio, Texas 78213 F 210.342.3641 CHECKED SALM DRAWN EG TBPE FIRM REGISTRATION NO. F-4137 JOB NO.: 15009

ESA Mechanical & Electrical Engineering, Inc.

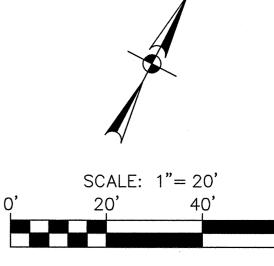


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## **LOCATION MAP**

(NOT TO SCALE)



### **LEGEND**

PROPOSED LIGHT DUTY ASPHALT PAVEMENT (SEE SHEET C3.00)

GRAVEL PAVE SYSTEM PAVING (REF. ARCHITECT'S PLANS)

PROPOSED CONCRETE SIDEWALK (REF. ARCHITECT'S PLANS)  $\triangle$ EXISTING FIRE LANE STRIPING 

PROPERTY LINE

- 2 4" WIDE WHITE STRIPING, TYPICAL
- (SEE SHEET C3.01 FOR DETAILS)

- CONTRACTOR TO
  RECONSTRUCT 6" CURB CONTRACTOR TO REPLACE )
  FIRE LANE STRIPING (SEE DETAIL SHT. C3.01)

## **PAVEMENT NOTES:**

- 1. ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THIS SCOPE OF WORK WHERE NOT SPECIFICALLY COVERED IN THE SPECIFICATIONS OR GEOTECHNICAL REPORT SHALL CONFORM TO ALL APPLICABLE CITY, COUNTY OR TXDOT STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (LATEST EDITION).
- 2. THE CONTRACTOR SHALL LOCATE AND PROTECT ALL EXISTING UTILITY AND STORM DRAIN SYSTEMS PRIOR TO CONSTRUCTION.
- 3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING TO ITS ORIGINAL, OR BETTER, CONDITION ANY DAMAGE DONE TO EXISTING TREES, BUILDINGS, UTILITIES, FENCES, PAVEMENT, CURBS, OR DRIVEWAYS (NO SEPARATE PAY ITEMS).
- THE CONTRACTOR SHALL VERIFY ELEVATIONS AND LOCATIONS OF EXISTING FACILITIES AND NOTIFY THE ENGINEER OF ANY CONFLICTS PRIOR TO BEGINNING CONSTRUCTION.
- 5. ALL PAINT SHALL BE 4" WIDE REFLECTIVE PAINT: WHITE ON ASPHALT PAVING AND YELLOW ON CONCRETE UNLESS OTHERWISE NOTED ON THE
- 6. ALL PAVEMENT MARKINGS SHALL RECEIVE TWO COATS OF PAINT.
- 7. NO WORK SHALL BE PERFORMED IN A PUBLIC RIGHT-OF-WAY WITHOUT A PERMIT.
- 8. ALL SIGNS SHALL CONFORM TO MUTCD, LATEST EDITION.
- THE CONTRACTOR SHALL SAW CUT EXISTING PAVING, CURB, AND SIDEWALKS TO PROVIDE A SMOOTH TRANSITION. NO JAGGED OR IRREGULAR EDGES WILL BE ALLOWED.
- 10. FIRE LANES SHALL HAVE A MINIMUM 2-WAY TRAFFIC WIDTH OF 25 FT. WITH A MINIMUM OUTSIDE TURNING RADIUS OF 50 FT., UNLESS OTHERWISE NOTED.
- 11. FIRE LANES NEXT TO FIRE HYDRANTS OR DESIGNATED FOR AERIAL APPARATUS SHALL BE A MINIMUM OF 26 FT.
- 12. FIRE LANES SHALL BE DESIGNATED IN ACCORDANCE TO THE LATEST INTERNATIONAL FIRE CODE AND PER APPLICABLE LOCAL AMENDMENTS.
- 13. THE CONTRACTOR SHALL HAUL OFF ALL EXCESS EXCAVATION MATERIAL AND STOCKPILE ON THE HARDBERGER PARK PROPERTY. CONTRACTOR TO COORDINATE WITH COSA PARKS AND RECREATION STAFF FOR EXACT LOCATION IN THE PARK. INSTALLATION OF SILT FENCING WILL BE REQUIRED FOR THE STOCKPILED SOIL.

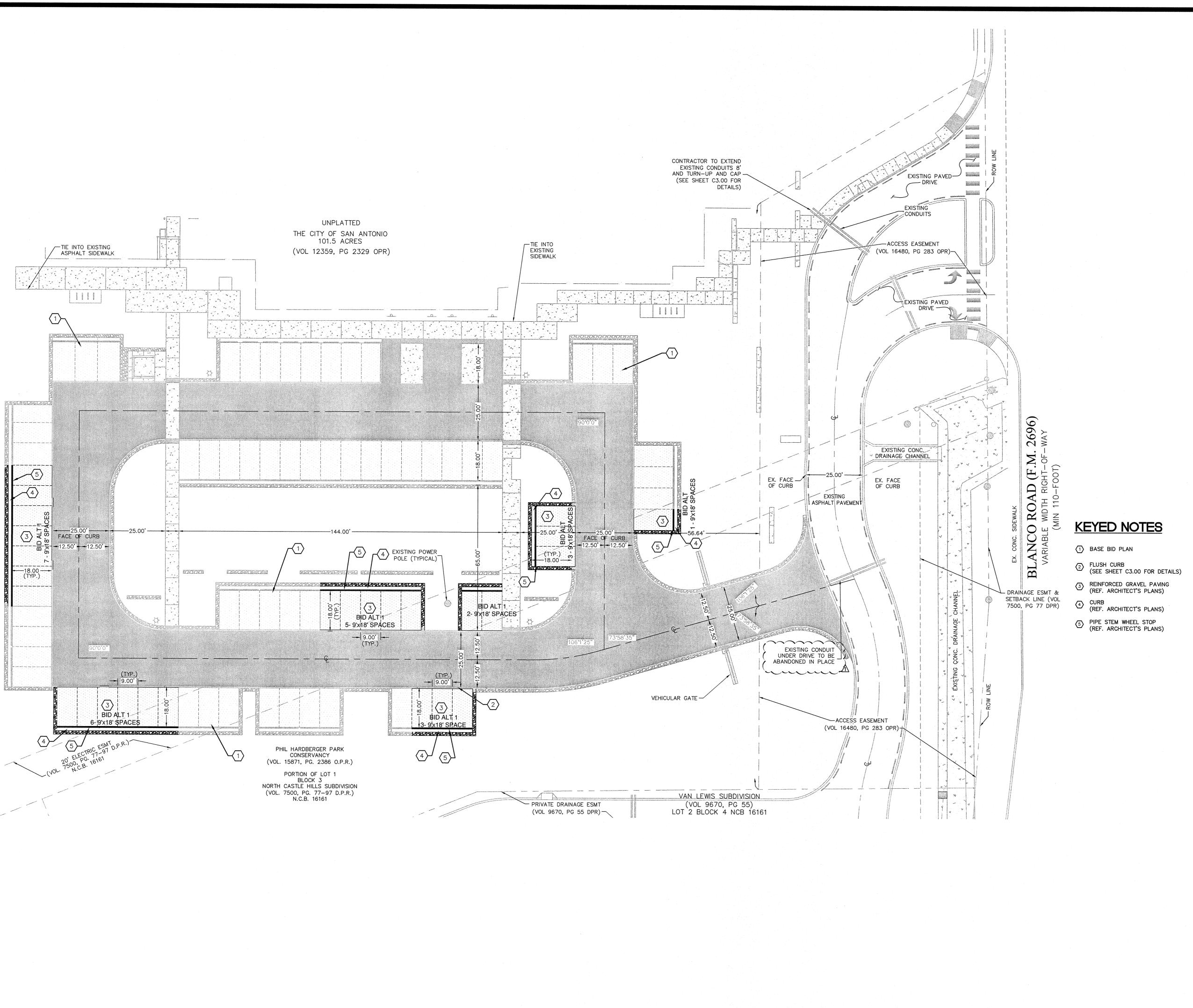
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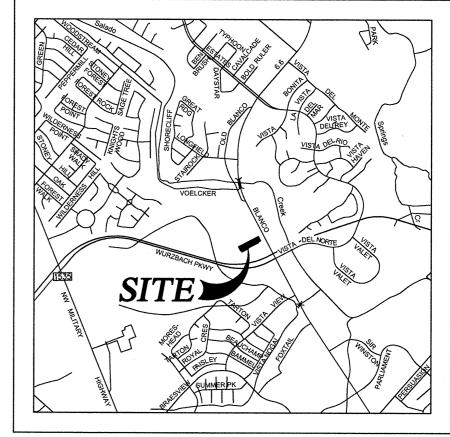
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JOB NO. 7912-38 JUNE 2015 DESIGNER CM

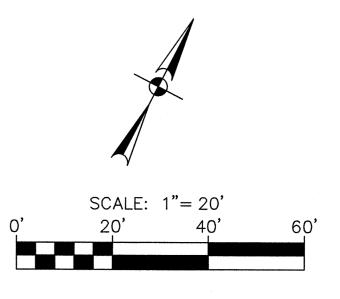
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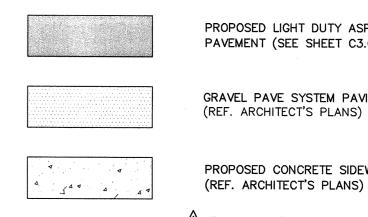
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**LOCATION MAP** (NOT TO SCALE)



### **LEGEND**



PROPOSED LIGHT DUTY ASPHALT PAVEMENT (SEE SHEET C3.00)

GRAVEL PAVE SYSTEM PAVING (REF. ARCHITECT'S PLANS) PROPOSED CONCRETE SIDEWALK

 $\triangle$ EXISTING FIRE LANE STRIPING PROPERTY LINE

- **PAVEMENT NOTES:**  ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THIS SCOPE OF WORK WHERE NOT SPECIFICALLY COVERED IN THE SPECIFICATIONS OR GEOTECHNICAL REPORT SHALL CONFORM TO ALL APPLICABLE CITY, COUNTY OR TXDOT STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (LATEST EDITION).
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PARKING ALTERNATE : PARK PHAS

BID

X **JOB NO.** 7912–38 JUNE 2015

RDBE

**DESIGNER** CM CHECKED JD DRAWN TL  $_{\text{SHEET}}$  C2.00A